Government
Publications

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Ontario. Legisl. Assembly

Sessional papers

SESSIONAL PAPERS.

36

VOL. XXVII.—PART V.

FIRST SESSION EIGHTH LEGISLATURE

OF THE

PROVINCE OF ONTARIO.

SESSION 1895.

TORONTO:
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LIST OF SESSIONAL PAPERS.

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Title.	No.	Remarks.
Accounts, Public	2	*Printed.*
Agricultural and Arts, Report	20	"
Agricultural College, Report	17	"
Agricultural Societies, Analysis	70	*Not printed.*
Algonquin National Park, Regulations	37	*Printed.*
" " " Boundaries	38	*Not printed.*
Asylums, Report	10	*Printed.*
Bee-Keepers' Association, Report	23	*Printed.*
Births, Marriages and Deaths, Report	27	"
Blind Institute, Report	15	"
Bonds and Securities	50	*Not printed.*
Canadian Institute, Report (*part of*)	4	*Printed.*
Central Prison, Broom contract	62	"
Children's Protection Act, Report	29	"
Coroners' Inquests	69	*Not printed.*
Crown Lands Report	5	*Printed.*
Dairymen and Creameries, Report	21	*Printed.*
Deaf and Dumb Institute, Report	16	"
Diamond Drill, Regulations	42	"
Diamond Drill, cost of	65	*Not printed.*
Division Courts, Report	7	*Printed.*
Drainage Works, reductions	56	"
Education, Report	4	*Printed.*
" Text-book publication	57	"
" Grants to schools	66	*Not printed.*
Elections, Return from Records	1	*Printed.*
" Petitions, trial Rules	54	"
Elgin House of Industry, Report	49	*Not printed.*
Elliott, Judge, Surrogate Court Fees	35	"
Entomological Society, Report	18	*Printed.*
Estimates	3	"

TITLE.	NO.	REMARKS.
Factories Inspectors, Report	26	*Printed.*
Farmers' Institutes, Report	22	"
Fees Commission, Report	32	"
Fruit Experimental Stations, Report	67	"
Fruit Growers' Association, Report	19	"
Game and Fish, Report	52	*Printed.*
Gaols, Prisons and Reformatories, Report	11	"
Good Roads Association, Report	59	"
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Health, Report	73	*Printed.*
Hospitals, Report	14	"
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Immigration, Report	6	*Printed.*
Industries, Report	68	"
Insurance, Report	13	"
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Judicature Act, fees to Judge Elliott	35	*Not printed.*
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Kingston School of Mining, Report	76	*Printed.*
Knight, Alfred, correspondence	61	*Not printed.*
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Liquor License Acts, Report	8	"
Magdalen Asylums, Report	12	*Printed.*
Man. Primitive, (*part of*)	4	"
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Mining Regulations	39	"
Mosgrove, Judge, Surrogate fees	36	*Not printed.*
Nelson & Sons, Broom contract	62	*Printed.*
Niagara Falls Park and River Railway Co'y., Report	60	*Not printed.*
North Hastings, registrations in	63	"

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Orphan Asylums, Report	12	*Printed.*
Osgoode Hall, fee paid officials	77	*Not printed.*
Poultry and Pet Stock, Report	24	*Printed.*
Primitive Man, (*part of*)	4	"
Public Accounts	2	"
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Public Institutions, maintenance expenditures	71	*Printed.*
Public Works, Report	9	"
Pulp and Paper Mills agreement	44	*Not printed.*
Queen Victoria Niagara Falls Park, Report	47	*Printed.*
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Tavern and Shop Licenses, Report	8	*Printed.*
Titles, Master of, Report	55	*Not printed.*
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CONTENTS PART I.

No. 1.. Return from the Records of the General Election to the Legislative Assembly in 1894, shewing: (1) The number of Votes polled for each Candidate in each Electoral District in which there was a contest. (2) The majority whereby each successful Candidate was returned. (3) The total number of Votes polled in each District. (4) The number of Votes remaining unpolled. (5) The number of names on the Voters' List in each District. (6) The population of each District as shown by the last census, together with a Supplementary Return from the Records of the Elections to the Legislative Assembly, after the General Election in 1894, shewing: (1) The number of Votes polled for each Candidate in each Electoral District. (2) The majority whereby each successful Candidate was returned. (3) The total number of Votes polled in each District. (4) The number of Votes remaining unpolled. (5) The number of names on the Voters' List in each District. (6) The population of each District as shewn by the last Dominion Census. Presented to the Legislature, 21st February and 5th April, 1895. *Printed.*

No. 2.. Public Accounts of the Province for the year 1894. Presented to the Legislature, 27th February, 1895. *Printed.*

No. 3.. Estimates for the service of the Province until the Estimates of the year are finally passed. Presented to the Legislature, 22nd February, 1895. *Not printed.* Estimates for the year 1895. Presented to the Legislature, 27th February, 1895. *Printed.* Estimates (Supplementary) for the year 1895. Presented to the Legislature, April 10th, 1895. *Printed.*

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No. 4.. Report of the Minister of Education for the year 1894, with the statistics for 1893. Presented to the Legislature, 4th March, 1895. *Printed.*

No. 5.. Report of the Commissioner of Crown Lands for the year 1894. Presented to the Legislature, 26th March, 1895. *Printed.*

No. 6.. Report of the Department of Immigration for the year 1894. Presented to the Legislature, 3rd April, 1895. *Printed.*

No. 7.. Report of the Inspector of Division Courts for the year 1894. Presented to the Legislature, 25th March, 1895. *Printed.*

No. 8.. Report of the working of the Tavern and Shop Licenses Act for the year 1894. Presented to the Legislature, 26th February, 1895. *Printed.*

No. 9.. Report of the Commissioner of Public Works for the year 1894. Presented to the Legislature, 7th March, 1895. *Printed.*

No. 10.. Report upon the Lunatic and Idiot Asylums of the Province for the year ending 30th September, 1894. Presented to the Legislature, 22nd February, 1895. *Printed.*

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No. 11.. Report upon the Common Gaols, Prisons and Reformatories of the Province for the year ending 30th September, 1894. Presented to the Legislature, 27th March, 1895. *Printed.*

No. 12.. Report upon the Houses of Refuge and Orphan and Magdalen Asylums for the year ending 30th September, 1894. Presented to the Legislature, 21st March, 1895. *Printed.*

No. 13.. Report of the Inspector of Insurance and Registrar of Friendly Societies, 1894. Presented to the Legislature, 25th February, 1895. *Printed.*

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No. 14.. Report upon the Hospitals of the Province for the year ending 30th September, 1894. Presented to the Legislature, 26th March, 1895. *Printed.*

No. 15.. Report upon the Ontario Institution for the Education of the Blind, Brantford, for the year ending 30th September, 1894. Presented to the Legislature, 22nd February, 1895. *Printed.*

No. 16.. Report upon the Ontario Institution for the Education of the Deaf and Dumb, Belleville, for the year ending 30th September, 1894. Presented to the Legislature, 22nd February, 1895. *Printed.*

No. 17.. Report of the Ontario Agricultural College and Experimental Farm and of the Agricultural and Experimental Union for the year 1894. Presented to the Legislature, 19th March, 1895. *Printed.*

No. 18.. Report of the Entomological Society for the year 1894. Presented to the Legislature, 25th February, 1895. *Printed.*

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No. 19.. Report of the Fruit Growers' Association of Ontario for the year 1894. Presented to the Legislature, 22nd March, 1895. *Printed.*

No. 20.. Report of the Agriculture and Arts Association for the year 1894. Presented to the Legislature, 25th February, 1895. *Printed.*

No. 21.. Reports of the Dairymen and Creameries Associations of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

No. 22.. Report of the Farmers' Institutes of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

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No. 23.. Report of the Bee-keepers' Association of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

No. 24.. Report of the Poultry and Pet Stock Associations of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

No. 25.. Report of the Sheep and Swine Breeders' Association of the Province for the year 1894. Presented to the Legislature, 22nd March, 1895. *Printed.*

No. 26.. Report of the Inspectors of Factories for the year 1894. Presented to the Legislature, 22nd March, 1895. *Printed.*

No. 27.. Report upon the registration of Births, Marriages and Deaths for the year 1893. Presented to the Legislature, 10th April, 1895. *Printed.*

No. 28.. Report of the Inspector of Legal Offices for the year 1894. Presented to the Legislature, 21st March, 1895. *Printed.*

No. 29.. Report of the work under the Children's Protection Act for the year 1894. Presented to the Legislature, 26th February, 1895. *Printed.*

No. 30.. Auditors' Report to the Board of Trustees on Capital and Income Accounts, University of Toronto, for the year ending 30th June, 1894. Presented to the Legislature, 1st March, 1895. *Printed.*

No. 31.. Report of the Standing Committee on Finance, University of Toronto. Presented to the Legislature, 1st March, 1895. *Printed.*

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No. 32.. Report of the Commissioners appointed to enquire concerning the mode of appointing and remunerating certain provincial officials now paid by Fees and the extent of the remuneration they should receive. Presented to the Legislature, 19th March, 1895. *Printed.*

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No. 33.. Report of the Standing Committee on Finance, Faculty of Medicine, University of Toronto. Presented to the Legislature, 1st March, 1895. *Printed.*

No. 34.. Report of the Council of University College, 1893-94. Presented to the Legislature, 25th February, 1895. *Printed.*

No. 35.. Copy of an Order in Council respecting the payment of surplus Surrogate Court Fees to Judge Elliott, Junior Judge of the County Court of the County of Middlesex. Presented to the Legislature, 25th February, 1895. *Not printed.*

No. 36.. Copy of an Order in Council respecting the payment of surplus Surrogate Court Fees to Judge Mosgrove, Junior Judge of the County Court of the County of Carleton. Presented to the Legislature, 25th February, 1895. *Not printed.*

No. 37.. Regulations respecting the Algonquin National Park. Presented to the Legislature, 28th February, 1895. *Printed.*

No. 38.. Copy of Order in Council extending the boundaries of Algonquin National Park. Presented to the Legislature, 28th February, 1895. *Not printed.*

No. 39.. Mining Regulations made during the year 1894. Presented to the Legislature, 28th February, 1895. *Printed.*

No. 40.. Regulations respecting Rondeau Provincial Park. Presented to the Legislature, 28th February, 1895 *Printed.*

No. 41.. Bursar's Statement, shewing disbursements and estimated revenue of University of Toronto, for the year 1894-5. Presented to the Legislature, 28th February, 1895. *Not printed.*

No. 42.. Rules and Regulations for the control and working of Diamond Drills. Presented to the Legislature, 1st March, 1895. *Printed.*

No. 43.. Return to an Order of the House of the seventh day of March, 1894, for a Return shewing (1) the actual loss, over and above insurance, sustained by the Province by the burning of the Toronto University building; (2) names of each insurance company, amount paid by each, amount insured in each at the time of the fire, dates of payment; (3) the present amount of insurance held by the Government on the new Parliament Buildings, University and Upper Canada College, giving names of each company and the amount each carries, and the rate *per* $100.00; (4) what loss was sustained over and above insurance on the burning of the Central Prison. Presented to the Legislature, 1st March, 1895. Mr. *Ryerson. Not printed.*

No. 44 . Copy of Agreement between Her Majesty the Queen, E. V. Douglas and Francis H. Clergue, for the erection and equipment of pulp and paper mills at Sault Ste. Marie. Presented to the Legislature, 4th March, 1895. *Not printed.*

No. 45... Report of the Council of the University of Toronto. 1893-4. Presented to the Legislature, 7th March, 1895. *Printed.*

No. 46.. Statement of the affairs of the Toronto General Trusts Company for the year 1894. Presented to the Legislature, 7th March, 1895. *Not printed.*

No. 47.. Report of the Commissioners of the Queen Victoria Niagara Falls Park for the year 1894. Presented to the Legislature, 7th March, 1895. *Printed.*

No. 48.. Statement as to the disposal of the Revised and Sessional Statutes for the year 1894. Presented to the Legislature, 7th March, 1895. *Not printed.*

No. 49.. Report of the Inspector of the House of Industry and Refuge, County of Elgin, for the year 1894. Presented to the Legislature, 11th March, 1895. *Not printed.*

No. 50.. Detailed Statement of all Bonds and Securities recorded in the Provincial Registrar's Office since the last Return submitted to the Legislative Assembly, made in accordance with the provisions of R. S. O. chap. 15, sec. 23. Presented to the Legislature, 11th March, 1895. *Not printed.*

No. 51.. Return to an Order of the House of the eleventh day of March, 1895, for a Return of copies of all correspondence between the Minister of Education, or any member of the Government, and the authorities, or any of them, of University College relating to the matter at issue between the students and the authorities of the College. Presented to the Legislature, 12th March, 1895. Mr. *Whitney.* *Printed.*

No. 52.. Report of the Ontario Game and Fish Commission for the year 1894. Presented to the Legislature, 18th March, 1895. *Printed.*

No. 53.. Report of Upper Canada College for the year ending 30th June, 1894. Presented to the Legislature, 15th March, 1895. *Printed.*

No. 54.. General Rules and Orders made by the Court of Appeal for Ontario, respecting the trial of Election Petitions pursuant to the Ontario Controverted Elections Act, R. S. O., chap. 10. Presented to the Legislature, 15th March, 1895. *Printed.*

No. 55.. Report of the Master of Titles for the year 1894 Presented to the Legislature, 18th March, 1895. *Not printed.*

No. 56.. Return to an Order of the House of the seventh day of March, 1894, for a Return shewing what deductions have been made in the past ten years in the amounts payable by any municipality to the Province in respect of Drainage Works, or advances made for such works, giving each municipality separately, with the amount of the original indebtedness and the amount of the reduction made with respect to it, and the authority for such reduction. And shewing also, whether any of such municipalities, and if so, which, are in arrear in respect of the payments to have been made on the reduced indebtedness and the amounts in arrear. Presented to the Legislature, 19th March, 1895. Mr. *Meredith.* *Printed.*

No. 57.. Certain Minutes of the Education Department and Copies of Agreement with certain Publishers of Text Books used in the Schools. Presented to the Legislature, 21st March, 1895. *Printed.*

No. 58.. Return shewing the fees and emoluments of the Registrars of Deeds for the Province for the year 1894, with which are contrasted receipts of the same nature in the years 1892 and 1893. Presented to the Legislature, 1st April, 1895. *Printed.*

No. 59.. Report of the Good Roads Association of Ontario for the year 1894 Presented to the Legislature, 22nd March, 1895. *Printed.*

No. 60... Report of the Niagara Falls Park and River Railway Company for the year 1894. Presented to the Legislature, 22nd March, 1895. *Not printed.*

No. 61.. Return to an Order of the House of the eleventh day of March, 1895, for a Return of copies of all correspondence relating to the appointment of Alfred Knight as Clerk of the First Division Court of the Counties of Lennox and Addington. Presented to the Legislature, 22nd March, 1895. Mr. *McLaren.* *Not printed.*

No. 62.. Copy of an agreement between the Inspector of Prisons and Public Charities and Messrs. H. A. Nelson & Sons, relative to the manufacture of brooms at the Central Prison. Also, of an Order in Council approved by His Honour the Lieutenant-Governor the eighteenth day of August, 1894, authorizing the Inspector to execute the said agreement. Presented to the Legislature, 27th March, 1895. *Printed.*

No. 63.. Return to an Order of the House, of the eighth day of March, 1895, for a Return, shewing the number of registrations in each Municipality in the County of Hastings. The number of registrations during the last ten years in the Riding of North Hastings, in the different Municipalities, together with the registrations during the last ten years in the Township of Hungerford. The registration fees during the year 1894 in the Riding of North Hastings and the Township of Hungerford. Presented to the Legislature, 25th March, 1895. Mr. *Haggerty.* *Not printed.*

No. 64.. Return to an Address to His Honour the Lieutenant-Governor, of the fifteenth day of March, 1895, praying that he will cause to be laid before this House copies of all correspondence in the possession of the Department of the Attorney-General of Ontario in reference to warrants issued in one Province and to be endorsed in another. Also, copies of all letters and documents relating to warrants issued in Montreal and endorsed in Ottawa. Presented to the Legislature, 25th March, 1895. Mr. *Evanturel.* *Not printed.*

No. 65.. Return to an Order of the House of the eighteenth day of March, 1895, for a Return shewing the cost of the Diamond Drill; the date when operations were begun with it, and the number of days it has been in operation; the hours of the day it is worked; a statement of the work done and where carried on since its purchase and the number of men employed in its use and the rate of wages at which they are engaged. Presented to the Legislature, 28th March, 1895. Mr. *Farwell.* *Not printed.*

No. 66.. Regulations of the Department of Education respecting grants to Schools in New and Poor Townships. Presented to the Legislature, 2nd April, 1895. *Not printed.*

No. 67.. Report of the Fruit Experimental Stations of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

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No. 68.. Report of the Bureau of Industries of the Province for the year 1894. Presented to the Legislature, 5th April, 1895. *Printed.*

No. 69.. Return to an Order of the House of the fourteenth day of March, 1894, for a Return of all Coroners' Inquests held under the provisions of the Revised Statutes respecting Coroners, or the Acts consolidated therein, for each of the ten years preceding the first of January, 1880, and for each of the ten years succeeding the same date. The Return to shew the particulars for each year separately, and whether such inquests were held under the provisions of section 3 of the said Revised Statutes, or of sub-section 1 of the 4th section, or of sub-section 2 of the said 4th section thereof. Presented to the Legislature, 5th April, 1895. Mr. *Hudson.* *Not printed.*

No. 70.. Analysis of Reports of County, Township and Horticultural Societies. Presented to the Legislature, 6th April, 1895. *Not printed.*

No. 71.. Return to an Order of the House of the twenty-second day of March, 1895, for a Return, classifying the maintenance expenditures of the Public Institutions of the Province for the year 1893, under heads shewing: (*a*), Expenditure for salaries, wages, etc.; (*b*), Amounts paid for supplies furnished under contract; (*c*), Expenditure for meat supplies under special arrangement; (*d*), Expenditure for other supplies under different heads, indicating the comparative practicability or impracticability of purchasing same by tender, instead of the open market. Presented to the Legislature, 8th April, 1895. Mr. *Hobbs.* *Printed.*

No. 72.. Report of the Bureau of Mines for the year 1894. Presented to the Legislature, 9th April, 1895. *Printed.*

No. 73.. Report of the Provincial Board of Health for the year 1894. Presented to the Legislature, 10th April, 1895. *Printed.*

No. 74.. Report of a Special Committee of the Senate of Toronto University with respect to the Assets and Endowment of the University. Presented to the Legislature, 10th April, 1895. *Printed.*

No. 75.. Report of the Secretary and Registrar of the Province for the year 1894. Presented to the Legislature, 10th April, 1895. *Printed.*

No. 76.. Report of the Board of Governors of the School of Mining and Agriculture, Kingston. Presented to the Legislature, 11th April, 1895. *Printed.*

No. 77.. Return to an Order of the House of the third day of April, 1895, for a Return shewing the names of all officials employed in the Courts, or in connection with the Courts, at Osgoode Hall, Toronto, who are paid wholly, or in part, by fees. The amount of fees collected by each such official, the services for which such fees are charged, amount of fees retained by each of such official for his own use and the amount of fees, if any, paid to the Law Society or to the Province. Presented to the Legislature, 11th April, 1895. Mr. *McPherson.* *Not printed.*

TWENTY-SIXTH ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION

OF ONTARIO

1894.

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, TORONTO.)

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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1895.

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MURRAY PETTIT, Esq., Winona,
President of the Fruit Growers' Association of Ontario, 1895.

WEST SIDE OF CONSERVATORY, AT ONTARIO AGRICULTURAL COLLEGE, GUELPH.

TWENTY-SIXTH ANNUAL REPORT

OF THE

FRUIT GROWERS' ASSOCIATION OF ONTARIO

To the Honorable John Dryden, Minister of Agriculture :

Sir,—I have the honor of placing before you for approval the Twenty-Sixth Annual Report of the Fruit Growers' Association of Ontario. I believe you will find it to contain information of great value to Ontario fruit growers, on fertilization of flowers in orchards, fungi and insects and their remedies, new fruits, score cards for judging fruits, prevention of fraud in fruit packing, and numerous other subjects.

The interest shown in our Orillia meeting was unprecedented. Our work is enlarging on every hand to such an extent that our finances are taxed to the utmost to meet our requirements.

I have the honor to be,

Sir,

Your obedient servant,

Grimsby, January 7th, 1895.

L. WOOLVERTON,
Secretary.

OFFICERS FOR 1895.

PRESIDENT:

Murray Pettit .... Winona, Ont.

VICE PRESIDENT:

W. E. Wellington .... Toronto, Ont.

SECRETARY-TREASURER AND EDITOR:

L. Woolverton .... Grimsby, Ont.

DIRECTORS:

Division No. 1	W. S. Turner, Cornwall.
Division No 2	R. B. Whyte, Ottawa.
Division No. 3	George Nicol, Cataraqui.
Division No. 4	Wellington Boulter, Picton.
Division No. 5	Thos. Beall, Lindsay.
Division No. 6	W. E. Wellington, Toronto.
Division No. 7	W. M. Orr, Stony Creek.
Division No. 8	A. M. Smith, St. Catharines.
Division No. 9	L. Chapin, Brantford.
Division No. 10	J. A. Morton, Wingham.
Division No. 11	T. H. Race, Mitchell.
Division No. 12	Alex. McNeill, Windsor.
Division No. 13	G. C. Caston, Craighurst.

AUDITORS:

A. H. Pettit	Grimsby.
George Fisher	Burlington.

CONSTITUTION AND BY-LAWS OF THE ASSOCIATION.

CONSTITUTION.

Art. I. This Association shall be called "The Fruit Growers' Association of Ontario."

Art. II. Its object shall be the advancement of the science and art of fruit culture by holding meetings for the exhibition of fruit and for the discussion of all questions relative to fruit culture, by collecting, arranging and disseminating useful information, and by such other means as may from time to time seem advisable.

Art. III. The annual meeting of the Association shall be held at such time and place as shall be designated by the Association.

Art. IV. The officers of the Association shall be composed of a President, Vice-President, a Secretary, or Secretary-Treasurer, and thirteen Directors.

Art. V. Any person may become a member by an annual payment of one dollar, and a payment of ten dollars shall constitute a member for life.

Art. VI. This Constitution may be amended by a vote of the majority of the members present at any regular meeting, notice of the proposed amendments having been given at the previous meeting.

Art. VII. The said Officers and Directors shall prepare and present at the annual meeting of the Association, a report of their proceedings during the year, in which shall be stated the names of all the members of the Association, the places of meeting during the year, and such information as the Association shall have been able to obtain on the subject of fruit culture in the Province during the year. There shall also be presented at the said annual meeting a detailed statement of the receipts and disbursements of the Association during the year, which report and statement shall be entered in the journal and signed by the President as being a correct copy; and a true copy thereof, certified by the Secretary for the time being, shall be sent to the Minister of Agriculture within forty days after the holding of such annual meeting.

Art. VIII. The Association shall have power to make, alter and amend By-laws for prescribing the mode of admission of new members, the election of officers, and otherwise regulating the administration of its affairs and property.

BY-LAWS.

1. The President, Vice-President and Secretary-Treasurer shall be *ex-officio* members of all committees.

2. The Directors may offer premiums to any person originating or introducing any new fruit adapted to the climate of the Province which shall possess such distinctive excellence as shall, in their opinion, render the same of special value; also for essays upon such subjects connected with fruit growing as they may designate, under such rules and regulations as they may prescribe.

3. The Secretary shall prepare an annual report containing the minutes of the proceedings of meetings during the year: a detailed statement of receipts and expenditure, the reports upon fruits received from different localities, and all essays to which prizes have been awarded, and such other information in regard to fruit culture as may have been received during the year, and submit the same to the Directors or any Committee of Directors appointed for this purpose, and, with their sanction, after presenting the same at the annual meeting, cause the same to be printed by and through the Publication Committee, and send a copy thereof to each member of the Association and to the Minister of Agriculture.

4. Seven Directors shall constitute a quorum, and if at any meeting of Directors there shall not be a quorum, the members present may adjourn the meeting from time to time until a quorum shall be obtained.

5. The annual subscription shall be due in advance at the annual meeting.

6. The President (or in case of his disability, the Vice-President), may convene special meetings at such times and places as he may deem advisable; and he shall convene such special meetings as shall be requested in writing by five members.

7. The President may deliver an address on some subject relating to the objects of the Association.

8. The Treasurer shall receive all moneys belonging to the Association, keep a correct account thereof and submit the same to the Directors at any legal meeting of such Directors, five days' notice having been previously given for that purpose.

9. The Directors shall audit and pass all accounts, which, when approved of by the President's signature, shall be submitted to and paid by the Treasurer.

10. It shall be the duty of the Secretary to keep a correct record of the proceedings of the Association, conduct the correspondence, give not less than ten days' notice of all meetings to the members, and specify the business of special meetings.

11. The Directors, touching the conduct of the Association, shall at all times have absolute power and control of the funds and property of the Association, subject however to the meaning and construction of the Constitution.

12. At special meetings no business shall be transacted except that stated in the Secretary's circular.

13. The order of business shall be: (1) Reading of the minutes; (2) Reading of the Directors' Report; (3) Reading of the Treasurer's Report; (4) Reading of the prize essays; (5) President's Address; (6) Election of officers, and (7) Miscellaneous business.

14. These By-laws may be amended at any general meeting by a vote of two-thirds of the members present.

15. Each member of the Fruit Committee shall be charged with the duty of accumulating information touching the state of the fruit crop, the introduction of new varieties, the market value of fruits in his particular section of the country, together with such other general and useful information touching fruit interests as may be desirable, and report in writing to the Secretary of the Association on or before the fifteenth day of September in each year.

The President, Vice-President and Secretary shall be *ex-officio* members of the Board of Directors and of all committees. The reasonable and necessary expenses of directors and officers in attending meetings of the Board of Directors and of Committees shall be provided from the funds of the Association.

Local Fruit Growers' Association.

16. It shall be the duty of the officers and directors of the Fruit Growers' Association of Ontario to encourage the formation of local fruit growers' horticultural societies in affiliation with the Ontario Association.

17. Any one may become a member of such local society for one year upon payment into its treasury of a minimum sum of one dollar; and a compliance with clause 18 of these by-laws shall constitute him also a member of the Ontario Association for the same term.

18. On the receipt of the names of such members, with the required fees, the secretary of such local affiliated society may transmit their names and post office addresses, together with the sum of eighty cents for each to the Secretary of the Fruit Growers' Association of Ontario, who will enter their names as members of that society, entitled to all its privileges, providing the initial number of such names be not less than ten.

19. Each local society so affiliating, with a membership of not less than twenty-five, shall be entitled to a visit from some member of the board of directors or other prominent horticulturists, once a year, at their own request; it being understood that the railway expenses of such speaker shall be paid by the Ontario Society, and the entertainment provided by the local society.

20. The proceedings of such local fruit growers' horticultural societies shall, on or before the 1st day of December of each year, be forwarded to the secretary of the Ontario Society, who may cull out such portions for the Annual Report to the Minister of Agriculture for the province, as may seem to him of general interest and value.

21. These local societies, if formed in cities, towns or incorporated villages, may be formed under the Agriculture and Arts Act (see sections 37, 46 and 47) and receive their due share of the Electoral District grant for the support of such societies.

22. Each local affiliated society is further expected to send at least one delegate to the annual meeting of the Fruit Growers' Association.

The director of the Fruit Growers' Association of Ontario of the Agricultural District in which such society is formed, shall be *ex-officio*, a member of the executive committee of such local society and receive notices of all its meetings.

AGRICULTURAL DIVISIONS.

1. Stormont, Dundas, Glengarry, Prescott and Cornwall.

2. Lanark North, Lanark South, Renfrew North, Renfrew South, Carleton, Russell and the City of Ottawa.

3. Frontenac, City of Kingston, Leeds and Grenville North, Leeds South, Grenville South, and Brockville.

4. Hastings East, Hastings North, Hastings West, Addington, Lennox and Prince Edward.

5. Durham East, Durham West, Northumberland East, Northumberland West, Peterborough East, Peterborough West, Victoria North (including Haliburton), and Victoria South.

6. York East, York North, York West, Ontario North, Ontario South, Peel, Cardwell and City of Toronto.

7. Wellington Centre, Wellington South, Wellington West, Waterloo North, Waterloo South, Wentworth North, Wentworth South, Dufferin, Halton and City of Hamilton.

8. Lincoln, Niagara, Welland, Haldimand and Monck.

9. Elgin East, Elgin West, Brant North, Brant South, Oxford North, Oxford South, Norfolk North, and Norfolk South.

10. Huron East, Huron South, Huron West, Bruce Centre, Bruce North, Bruce South, Grey East, Grey North and Grey South.

11. Perth North, Perth South, Middlesex East, Middlesex North, Middlesex West and City of London.

12. Essex North, Essex South, Kent East, Kent West, Lambton East and Lambton West.

13. Algoma East, Algoma West, Simcoe East, Simcoe South, Simcoe West, Muskoka and Parry Sound.

THE ANNUAL MEETING, 1894.

The Annual Meeting of the Fruit Growers' Association of Ontario, opened at eight o'clock p m. on Tuesday, December 4th, in Shaftesbury Hall, Orillia, the President, Mr. T. H. Race, in the chair.

THE PRESIDENT'S ADDRESS.

By T. H. Race, Mitchell, Ont.

In rising to deliver, what falls to my lot to-night, the thirty-fourth annual address of the President to the Ontario Fruit Growers' Association, I feel deeply impressed with the truth of Solomon's affirmation that there is nothing new under the sun.

After thirty-three of my predecessors have performed annually this task you may well wonder what there is left for me to say that has not already been said.

My immediate predecessor had the advantage of most of us and especially of me in coming, as he did, both before and after the great Columbian Exposition. In his address two years ago he had the great exhibition in anticipation. One year ago he had it all before him in its magnificent fulfilment.

Two years ago this Association had to consider what its duty was in connection with the fruit interests of this province at the great World's Exposition, and how best it could perform that duty. One year ago it need do little but talk of its achievements and the honors that it won there. And it will look back with pride to those achievements for many years to come.

But we are not depending for a justification for our existence on what we have done, nor shall we rest content at what we have accomplished. As an Association, we have steadily developed, and extended our operations and influence since the first organiation, over thirty years ago, to the present time. We are bigger and better and stronger to-day than we were last year at this time, and we have a great future before us and a great work yet to do.

The fruit season just closing has had its disappointments, but they are not unmixed ones. Owing partly to the heavy frosts during the latter part of May and partly to the continued heavy rains immediately following, the great promise in the abundant show of blossom was not fulfilled in the crop of fruit; except perhaps in the one item of grapes. But while the apple crop has on the whole been short, prices have ruled high, and we have learned afresh the lesson, which we have hitherto accepted with more or less of doubting, that the Canadian apple of the right sort and quality need never lack for a ready market. It is gratifying to know that the apple grown in Ontario has established for itself a reputation in the markets of the old world that will insure it a sale in any quantities if properly and honestly handled. There is now no need for fear of over-production. The dangers to our apple industry in this province comes not from over-production, but from unsuitable fruit, bad packing and dishonest handling. We have much missionary work to do right here in this connection, and just how to accomplish that work, if Government inspection cannot do it, I am unable to suggest. It is lamentably true that the good reputation which our apples have secured abroad has been largely neutralized by the distrust that has shown itself in our packers and handlers, and which we regret to say, is not altogether without cause. This defect must be righted and our efforts as an Association are invited in that direction and to that end.

We have a grand country to work in, and we know not yet the possibilities of our land as a fruit producing province. The experiences of every passing year adds to our faith in the magnitude of these possibilities. The markets of the great Northwest are opening up to us and demanding more and more of our fruit every year. The markets of the old world are ours if we but supply them honestly with the best we are capable of producing.

When Moses desired to learn of the character and capabilities of the land of Canaan he sent a deputation over to gather of its fruits. And when they returned, bearing with them samples of the fruit that they had found and gathered, Moses was satisfied, and longed to possess so goodly a land. We have in this Province of Ontario a heritage as rich as any land that Moses ever wished for, and we are well out of the wilderness that our forefathers struggled in before this association was born. And now that we possess in peace a land so good, of such vast possibilities, it is a duty that we owe to the Almighty who gave it, to our forefathers who brought it out of the wilderness, to ourselves who now enjoy it, and to our children who shall hereafter inherit it, that we possess it well and frugally, making it by our efforts to produce more abundantly of the fruits so natural to its soil and climate.

Figures and statistics are usually dry and uninteresting things, especially when brought into an address like this. But in turning to the Trade Returns I find encouragements to the labors of this Association, and valuable lessons also in the condition of things as shown there. Taking first the importations of dried fruits for home consumption, we find that in 1891 the value of such commodities brought in from other countries amounted to $1,158,000. The following year it was down to $1,000,000, and the year just past to $900,000, decreasing at the rate of $100,000 a year, which is largely, if not wholly due to the increased consumption of home grown fruits.

In the matter of dried apples alone, we imported in 1892 $11,500 worth, and only $1,500 worth in 1893, which goes to show that the evaporation of home grown fruit is enormously increasing, and that the home consumption is being supplied by the Canadian evaporator.

In the matter of green apples, we brought in for home consumption in 1892 $81,000 worth, and only $35,000 worth in 1893, and in the former year we sent out to other countries $1,500,000 worth and in 1893 over $2,500,000 worth. In 1891 we imported grapes to the value of $79,000, and in 1893 the amount had been reduced to $70,000, showing conclusively that we are supplying our own markets more and more with our own fruits in all the staple lines, and annually increasing our exportations to other markets in several lines. In the matter of canned goods the consumption of home grown fruits is steadily increasing, and the importation of canned fruit proportionately falling off. In 1891 we imported canned fruit to the value of $73,000, and the amount had declined to $61,000 in 1893, while the average exports for the past four years shows a steady increase.

Then turning to the nursery interests, we find something of interest there. In 1889 we brought in from other countries $87,000 worth of apple trees for planting purposes. From that year to 1893, there has been a steady but marked annual decrease, until the amount last year reached only $24,000 worth. And while this decrease has been going on in importations the matter of orchard planting has been largely on the increase, showing that the Canadian nursery industry has been keeping pace with the general progress in home developments. I mention these matters because I believe they all have a bearing on and a close relation to the effects and influences of the Ontario and affiliated Fruit Growers' Associations.

I recognize with grateful acknowledgments the generous aid that this Association is receiving from the Department of Agriculture in the Ontario Government, and also from the Department of Agriculture at Ottawa. The former has, through liberal grants of money, enabled us to establish testing and experiment stations at several points throughout the province, where a great variety of fruits are now being grown and tested, that their qualities and suitability to our varying soils and climatic conditions may be ascertained before being offered to the public for profitable cultivation. We expect to widen and develop this department of our work as fast as the resources placed at our command will admit of; and it is confidently hoped that the results obtained will prove of much value to the fruit grower and to the province—sufficient, we believe, to more than justify the expenditure and the labor involved. To the Department of Agriculture at Ottawa we feel grateful for the ready response to our requests for tests and experiments in spraying and other means for the destruction of the codling moth, curculio and sundry other pests that the fruit grower has to contend with. For these tests and experiments the season has not been a suitable one, owing to the constant rains throughout the spraying season, but under more favorable circumstances, or I might say ordinary conditions, much valuable and practical knowledge must surely result from these experiments.

Since we met together one year ago one of our number has passed, like a ripened fruit, away. We mourn to-day, in the death of our fellow director, Mr. David Nicol, one whose association we all enjoyed and whose wise and deliberate counsel we all valued. And this loss that we all feel to-day reminds us that we too belong to a great vineyard whose fruit is ever ripening and dropping off. David Nicol was one who devoted himself industriously to the cultivation of the beautiful in nature and to the improvement and development of all the choicest fruits capable of production in his adopted province. To labor in the vineyard of nature was to him a labor of love, and out of his labor came both profit to himself and instruction to his fellow man. Let us remember him for the good he has done, for the valuable services he contributed to the interests with which we as an Association are identified, and for the ennobling example he left us in his life and labors. He neglected not the cultivation of the spiritual vineyard, and when the harvest time came he was gathered like a ripe and golden fruit into the garners of the celestial mansion.

FIRST DAY.—EVENING SESSION.

ORILLIA, Tuesday, December 4th, 1894.

President RACE: Ladies and gentlemen and members of the Ontario Fruit Growers' Association.—We have met together again after twelve months to compare our experience along the lines which we have been pursuing for years in this province. I feel like congratulating ourselves upon the very favorable auspices under which we have met here this year. We are in a beautiful town, and we find that there is greater enthusiasm manifested here than in most places where we have met in past years. We are also favored to-night with the presence of quite a number of ladies in the audience, which is gratifying to us. We hope that to-night is an index of better things. We desire to cultivate those features in our meetings which will reach the ladies and interest them in the beautiful in nature. I fear sometimes that we have neglected that side too much. We have some papers from ladies during our sessions and I believe that these will tend to revive the interest in that line. We have a very full programme, and more than we will get through with in four days, so we will try to get on as hastily as possible with these papers. I shall now introduce Prof. Panton.

FUNGI.

Prof. J. H. PANTON, of the Ontario Agricultural College, Guelph, delivered the following address, in the course of which he made frequent reference to a chart of illustrations: The subject which was allotted to me for this evening is a discussion of the fungi, one of the most interesting and one of the most instructive groups in plant life at the present time. A few years ago very few knew anything about fungi, in fact it was almost an unknown word, and many even now may not understand what the word means. However, I hope that by the time I get through you will all have a true conception of the meaning of the word fungi.

This is a division in the plant kingdom the study of which requires the aid of a microscope. I have brought a microscope with me to-night. It does not seem a very large instrument, but is an excellent one for the size. I just mention this as some may think of purchasing one. It is made by Leitz, and magnifies up to six hundred diameters. An instrument like this would cost quite a sum a few years ago, but can now be purchased for about $20. It is by means of a little instrument like this that I have been able to look into a great many of these obscure forms of plant life and bring out in detail on this chart how they appear under the microscope. You will notice that I have a chart before you, arranged so as to make my subject as clear as possible.

Rank. Where do tho fungi stand in the plant kingdom? Now we find that when we look abroad in nature there are two large divisions of plants, viz.: the flowering and flowerless. Who ever saw a fern flower? You have never seen a mushroom blossom, you never saw a seaweed bloom. Fungi, too, never flower, and consequently they are what we call flowerless plants. Flowerless plants grow from what we call spores; flowering plants grow from seeds. All flowering plants started from seed; all flowerless plants started from spores. Among these flowerless plants I might mention seaweeds, ferns and mosses, but we shall not consider them. But there is another group called fungi, and this shall engage our attention this evening.

Fungi start from spores. Now what is the difference between a seed and a spore? A spore is invisible. Why, this room is full of them! The air is swarming with them—they are all around us. If I were to leave a piece of bread exposed in this room for twenty-four hours, there would be mould upon it.

Seeds are visible. I do not think you can name any seed which we cannot see. They are all sizes. But spores are invisible, and we require a microscope in studying them. You may have the liberty during the session of looking through the microscope and seeing the spores on the gooseberry, etc. Then there is another difference. The spore has a very thin covering, but the seed always has a distinct covering. There is still another difference. In the spore there is no embryo, while in the seed there is.

You take a wheat grain and cut it, and in one part you will see the embryo or little plant, which is the point of germination Take any seed and when examined you will always find a certain part we call embryo or young plant, but you never find an embryo in a spore. Another difference; when you put that little spore in the ground, germination is indefinite. By that, I mean that the spore has not a certain point from which it starts. Now, in the seed there is always a particular spot where the germ lies and from which the seed will start to grow.

The nature of fungi will now occupy our attention. Although not true for every one, yet I may make the general statement that in most cases after the spore germinates, it produces a lot of little threads. These interlace and pass in among the cells of the plant upon which the fungus is found, or among the material on which it grows.

Fungi either live on dead organic matter or upon living matter. It is not an uncommon thing for little suckers to dip down into the cells among which the thread-like structures grow. After a time in the history of the fungus spores are produced. As soon as that happens, you will find that from these little threads stalks grow up, each with a little round body at the end. That little structure may contain many spores inside of it. This is one of the ways a fungus produces fruit. There are a great many ways of producing fruit among the fungi, most of which are very wonderful and interesting.

There is a certain class, like the mushroom and toadstool, which grow on dead organic matter. They are called saprophytes. There is another kind, like the rust on the wheat and plum knot on plums, that live on living things; they are called parasites. We have considered the nature of fungi, let us now consider the third point in my chart.

The different kinds of fungi. It would take too long to discuss them in detail, but I shall endeavor to give you a general outline of the different types among these peculiar plants. There is nothing that comes home to the fruit grower more than the effects of these fungi upon his crops. I shall now refer to the different kinds, and avoid as far as possible the use of technical names.

The first are the slimes, more troublesome to the farmer than fruit grower, as they attack his turnips sometimes, causing the so-called "clubroot."

The next we notice is the great family of microbes. There are many forms in this group, which is now so much studied, because we find here the cause of many contagious diseases. It seems that we are surrounded on all sides by invisible enemies in the form of these microbes, all of which are exceedingly minute. We can overcome them by keeping in good condition, but if a person is in poor health he does not know at what time the microbe of typhoid fever or some other disease may take hold of him.

Some of these microbes are troublesome in the fruit growers' orchard. For instance, there is one that attacks the pear when affected with pear blight. These microbes are among the lowest forms of fungi. There is an oval type often associated with the rot. There is the unfortunate rod type that causes consumption. We find this not only associated with consumption, but also in a good many diseases. There is one that causes lockjaw; there is one that causes cholera, and there is also one that is often found in sewerage material. Each has a distinct shape and each disease has a specific form of microbe.

We now come to the moulds. If you take a piece of lemon and lay it aside for a few days in some warm place, like this room, you will find it will get covered with mould. Small stalks start up, little knobs grow at the end, each becoming full of spores.

Mildews may be divided into two types, the white and the brown. Let us first look into the white type of mildew. One is found on the grape and is called grape mildew. In this case you have all noticed that the under side of the leaf becomes covered with a web-like structure. If you take an affected leaf and cut a thin section and examine among the cells, you will see threads, and dipping down from these into the cells little suckers, which absorb nourishment from the host-plant. Out of the spores (*stomata*) in the leaves some five or six little stalks bearing on the end little round bodies, appear as the fungus develops. Now what happens? One of these oval bodies drops from the end of the stalk, if I may use the expression, and very soon after the contents commence to divide up, and roll out as rounded bodies. These develop a couple of hair-like appendages which enable the spores to move about to reach a suitable spot for development. The spores cannot develop unless it is moist. This enables them to wriggle around until they find a suitable place for germination, and when that takes place you have the life history repeated as already described. Such is the mode of development seen in the mildew, which is known as the Downy Mildew of the grape.

Here is very much the same thing in the potato. (*Ill.*) The old fashioned rot in the potato is largely owing to the presence of mildew.

Now there are a great many mildews, the grape, pea, turnip, etc. Almost every plant we find has its specific mildew. Even on the plant Shepherd's Purse, we find a mildew, which in its general life history is the same as the mildews referred to on the chart.

Having discussed the white mildews, we shall now examine some of the brown. Here we find two types, one, which is external in its attack, growing largely on the surface of the leaf. We find another type internal growing within the tissues of plants. Probably the one with which you are most familiar is that which appears on the gooseberry. I have placed a very fine specimen of that under the microscope upon the table, which you may examine when you have an opportunity. When this mildew makes its appearance, you first see a greyish white powdery substance upon the gooseberry, resembling in form this figure. (*Ill.*) If you examine the other mildews, you will find the threads are not jointed, but when you come to this form the threads show partitions. As soon as the time arrives for the fungus to produce spores, it throws up little erect threads, presenting a jointed appearance. The last division falls off, then another, and so on, others growing in their places, until innumerable spores are produced. We see in this fungus a peculiarity; a class of spores appear at a certain part of the season and another class later on. Those about which I have been speaking are summer spores, the use of which is to propagate the fungus with rapidity. They grow in a very short time and thus the fungus spreads readily. The late spores, however, are longer in being produced, their object being to carry the disease into another season.

Later in the season the gooseberry becomes brown. If you take a small piece of this and put it under the microscope you will find any number of threads and minute brown nut-like structures. Let us look into these brown bodies and we shall find other minute bodies that are about the shape of an ordinary flask; each of these contains eight spores. The diagram before you represents the appearance of this fungus upon the gooseberry.

You will find almost the same mildew on the grape. It is what you call powdery mildew and it is also external. There is little difference except that the little brown nuts in the grape are surrounded by a number of hook like threads. You will sometimes find a mildew of this nature upon the apple, but instead of hooks at the end of the threads you find little expansions, but much the same in other respects. These are among the most common types of what I have called external brown mildews.

We now come to some which are internal, and probably the one with which you are most familiar is the plum knot. I do not think that any of you here think that the plum knot is caused by an insect, but by a parasitic plant. In the spring of the year when the plum knot begins to form, you will notice that it has a velvety appearance caused by the presence of these little stalks sticking up with spores on the end of them. In February after the velvety appearance has passed away, if you take a very thin section of the plum knot, you will find it is almost covered with minute pimples. A thin section at this time shows small spaces containing many flask like structures and in each eight spores. These are winter spores to carry the disease into the next season. Looking at the diagram you see that this fungus grows in the tissues of the knot, and you do not see it as you do the mildew on the gooseberry.

The ergot of rye has much the same life history. When this trouble gets into the rye it is a very dangerous thing to feed it to cattle. It produces disease and serious results follow.

Black rot of the grape is the same form and there are a great many others belonging to the type of external brown mildew.

Our next group embraces the rusts. We understand the nature of the life history of the rust on wheat, but as yet, have failed to get a good remedy. Here are a few diagrams illustrating the life history of the rust in wheat, and the rust that appear on the apple and sometimes on the quince. The rusts have a peculiar life history. In the rust it takes two plants to complete the disease. There are several instances of this principle in the animal kingdom. It takes two animals to produce tapeworm, hog and man, or a cat and a mouse. A mouse develops it so far and when the cat eats the mouse, the tapeworm is developed in the cat. The same is true in the case of trichina, the hog develops it so far and man completes the development.

Now we find the same thing in plant life; wheat rust can go so far on your wheat, but the life history of the plant is completed on another plant; in some cases on the barberry. The apple rust cannot be developed on the apple alone. The spores get to the red cedar and there they develop what we call cedar apples. In the spring of the year you will observe on these apples peculiar structures like this (*Ill.*) and these develop something like you see here (*Ill.*) so that before you can have rust on the apple, you must have red cedars. It is therefore wise to destroy the red cedars.

We next consider the smuts. I do not think any of the smuts trouble the fruit grower, but they do the farmer. Here are some forms, (*Ill*)

But as they are of more interest to farmers than fruit growers I pass on to the last group of the fungi.

Mushrooms. This is a comparatively harmless family. I am inclined to think there is likely to be a field opened up for enterprise in the cultivation of mushrooms People are not only collecting them from meadows, but are beginning to grow them for profit. This group is one of the largest among the fungi. Now if you examine the soil in which mushrooms grow you will find it is full of thread-like structures, the vegetative part of the fungus, from this arises the so-called mushroom, which is really the fruit bearing part of the fungus; These thin gills beneath are covered with spore-bearing stalks. These spores as soon as matured fall into the ground where the mushrooms grow. The ground is full of them. We have now directed your attention to several groups of the fungi, viz: slimes, microbes, moulds, mildews, rusts, smuts and mushrooms, some of which are very injurious to the fruit grower.

Remedies. We have learned something about the nature of these fungi. What shall we do to destroy them? Thousands of dollars have been lost every year from the attack of fungi, but we are now learning how this may be diminished. From a study of the habits of the fungi we have learned we must depend upon prevention rather than cure. Many are located in the cells of the plants and beyond our reach, so that we must deal with them at an earlier stage. We should always, as far as possible, destroy all affected material. Some of you may have had your plums affected with plum rot. Affected plums left hanging on the tree have on them millions of spores, to be carried over to the next season. As soon as the warm weather arrives, these spores may be wafted about and thus cause any amount of plum rot. These should be destroyed. Examine the rot that attacks apples, you will see affected apples covered with spores which cause the disease. How important that they shouldbe destroyed when seen!

Another principle that I would advocate in the prevention of fungi, is cultivation, so far as it aids in increasing the vigor of the tree. It is a very important thing to keep the plant in a healthy condition.

The third principle is the application of fungicides or fungi killers. This principle has been most emphatically demonstrated by many experimenters with fungicides. This is a list of the most common: copper sulphate and Bordeaux mixture (the same thing except that the latter has lime mixed with it); eau celeste (sulphate of copper, washing soda, with a little ammonia); carbonate of copper and potassium sulphide. But we have cut the list down until we have about one remedy for all, *Bordeaux*, so that we have now, I believe, a fungicide which covers nearly every case. There is one that is being largely used for the mildew of the gooseberry, Potassium sulphide, but the Bordeaux is the panacea for all; and every one should know what it is. It is simple sulphate of copper, lime and water. Some differ a little regarding the proportions, but a very excellent one is: five pounds sulphate of copper, four pounds fresh lime, and forty gallons water.

I believe the proportion, four, four, forty will prove equally successful, and is easily remembered, as one pound sulphate copper, one pound of lime, ten gallons of water.

Application. The point to be kept before us is not to waste material and do the work thoroughly. There are very many ways of applying the fungicides. We have spraying machines for this purpose. There is the little hand sprayer the knapsack sprayer, the barrel, and the wagon with gearing. These are the machines we use. The form of nozzle used is of great importance; among the best are the Cyclone, the Vermorel. The latter is a very economical one, making an exceedingly fine spray. It is a little slow but does the work well. The Nixon has a sort of a sieve on the end of it, and throws out a strong spray. The McGowan is one which is very popular to-day. It is so graded that you can bring the spray down to a very fine condition, and there is little waste of material.

When to make the applications. Two before and two after blooming. What I mean by that is, first, in the early spring before the leaves buds swell, apply sulphate of copper in the proportion of one pound to twenty-five gallons of water, that is strong and as there is no foliage on the trees a little goes a long way.

In the case of grapes you may spray your grape-posts and trellis also, for some spores may be upon them. As the sulphate will burn the foliage and destroy it, consequently, after the foliage appears we should apply Bordeaux mixture, which is sulphate of copper and lime. The Bordeaux is applied before and immediately after blooming time, and again about ten days later. In other words, one application before foliage, one after foliage and before bloom, and two after bloom.

I have reached the end of the subject you so kindly asked me to discuss before you; but if there are any here who desire to ask some questions I shall be pleased to answer them as well as I am able. (Applause.)

A. M. SMITH: I would like to ask the Professor if plowing under leaves of a diseased grape would destroy it, or would there be any danger of the disease coming up?

Prof. PANTON: I think that if they were plowed in deep enough the spores would not likely reach the surface to do harm.

WM. ORR: At what time do the winter spores of plum knot fungus mature?

Prof. PANTON: About February.

A MEMBER: When do they propagate?

Prof. PANTON: They propagate in the spring.

A MEMBER: About what time do you assign to the maturity of the summer spores?

Prof. PANTON: About June and July, when the knot has a velvety appearance.

F. G. H. PATTISON: Do spores carry in the air?

Prof. PANTON: Yes; for they are so small that they may be readily carried about by the wind.

A MEMBER: Would there be any advantage in spraying in the fall immediately after the foliage has fallen?

Prof. PANTON: To some extent you may kill spores that are lying about.

A MEMBER: Is it a fact that fungicides have no effect upon spores after they germinate?

Prof. PANTON: I think they can if development is not gone too far so as to place the fungus beyond the reach of the fungicides.

A MEMBER: Do you consider that the black knot of cherry and knot of plum belong to the same species?

Prof. PANTON: Yes.

A MEMBER: Can you tell us anything about peach yellows?

Prof. PANTON: Not beyond that the cause is not known. The subject is now being studied by specialists, and as yet not much more has been learned than that it is contagious; but its cause has so far evaded research.

J. A. MORTON: I understood you to say in the course of your lecture that the potassium sulphide mixture is as useful as any other for destroying the gooseberry mildew. Now I have been taught that it is not. My experience with potassium sulphide thus far is that if you are not very careful it will dry up the leaves. I lost about half the leaves off my bushes after one application. Bordeaux mixture I consider a great deal safer. I have tried potassium three years, and Bordeaux mixture I have given only two years' test. Bordeaux is, in my experience, the safest and best remedy. This present year I have had no mildew on my gooseberries. Out of two hundred and fifty quarts I do not believe I had half-a-dozen gooseberries that showed any signs of mildew at all.

The SECRETARY: What kinds, Mr. Morton?

Mr. MORTON: All English varieties except Whitesmith. Before treating with Bordeaux mixture I had made up my mind to quit raising English gooseberries. One year, to test it, I treated one-half of my plants with Bordeaux mixture, and left the rest untreated. I do not advise anyone to do that from a commercial standpoint. The half not treated was badly mildewed, but the part treated with three applications of Bordeaux had no mildew. I can also corroborate what Prof. Panton has said with regard to the Bordeaux imparting a beautiful healthy appearance to the foliage. I found this in the case of the potassium sulphide, that, although I gave it as faithful a test as I did the Bordeaux, there would be patches which escaped the effect of the application. I think the Bordeaux acts more than by contact. Potassium acts only by contact. I also noticed that the foliage of my gooseberries that had been treated with potassium sulphide had not the healthy look that those had which were not treated. Perhaps that is the result in part of the treatment they had received the year before. But I will certainly require more proof and more experience to convince me to go back to potassium sulphide. Another thing about the potassium sulphide is that it is not the most pleasant smell to have about the place.

R. B WHYTE (Ottawa): I have had considerable experience with fungicides for the gooseberries. I grow about thirty varieties; some are very subject to mildew. I agree with Mr. Morton that potassium sulphide has not been as successful with me as the copper carbonate. I use carbonate-ammoniacal solution. On those which were sprayed with ammoniacal solution there was no mildew; on those treated with potassium sulphide there was a great deal. But I find that the Bordeaux spots the leaves while the ammoniacal copper carbonate does not.

Prof. PANTON: The ammonia makes it a little more expensive.

Mr. WHYTE: A little.

Prof. CRAIG (Ottawa): I am pleased to hear the remarks of the last gentleman. I have been experimenting on the celery with very good results. The question of the gooseberry mildew has been pretty well settled, but our latest experience has corroborated the experience given by Mr. Morton that Bordeaux mixture has given us the best results in preventing the gooseberry mildew. When potassium sulphide was first recommended by the Farm we had not then tried Bordeaux mixture for this disease. Since that time we have found that by using a weaker solution of the Bordeaux mixture we have better results. I think with regard to the remedy which Mr. Fisher has suggested, that of sulphur, he refers more particularly to the powdery form of mildew. It is not so effective for downy mildew.

The SECRETARY: I think that we are very apt to become discouraged too soon with our spraying experiments. Because we do not see the results the first year we give up. I believe that next year we may see the results of this year's work, and so on from year to year, because we are increasing the vigor and health of the plants. Now, if any plant is stunted it cannot do much with fruit; you must get it into a healthy condition first. It may take a year or two to get your plants into a vigorous state of growth to produce fruit, and when in this state they are better able to resist mildew. We should keep on for several years, and then we will find that results are forthcoming. I wish to refer to a little experience in this line. There were twelve gooseberry plants (Whitesmith) in one row, and I have applied Bordeaux mixture for the last two years. Now they are very subject to this mildew, and I was going to dig them out a year ago. I treated them with Bordeaux mixture all but one plant, but did not see very much difference that year. This year I treated the whole row, and the one that was missed last year was the only one that was affected with mildew this year, while those treated last year were clean. How do you account for that unless it was the two year's work?

Mr G. C. CASTON (Craighurst): In picking apples this fall we found that certain conditions in the location had a great deal to with the condition of the fruit. We found that when grown on rolling ground the apples were cleaner. The idea suggested is to plant trees on rolling ground, where they can get a good circulation of air.

A. W. PEART (Freeman): Does Paris green act as a fungicide as well as an insecticide?

Prof. PANTON: Some claim that it does, but we look upon it more as an insecticide.

FRAUDS IN FRUIT.

Mr. A. M. SMITH, of St. Catharines, read the following paper:

Notwithstanding that it has been remarked by one of the most prominent and observing men of our country that he never knew a man who was actively and energetically engaged in fruit culture to be a "mean man," I will venture the assertion that there is not another product of the soil through the medium of which there has been as many frauds practised as there has with fruit. From the time the Old Serpent fooled Eve with it in the garden down to the last apple packing, when all the best specimens were carefully placed in the end of the barrel that was to be opened, and the smaller ones dumped in the middle, somebody almost every day has been defrauded by it. My purpose is to mention a few of these frauds and leave it to the consciences of those who are present to decide whether they are guilty of any of them or not, and to have you suggest means, if you choose, whereby any of them can be prevented. The first I shall notice will be frauds practised by those who raise trees and plants for sale, the nurserymen and their agents, or in other words, begin at the root of the matter, for the first frauds they are guilty of is general, that of using roots or seedlings or seeds from unhealthy stock because they can get them cheaper, or in the matter of grafting apples or pears in cutting them up and making two or three trees from one seed, which by forcing may make trees large enough to sell but the vitality and fruit producing powers of which will be far behind a good healthy seedling, and in the matter of selecting seeds or pits, peaches for instance, many nurserymen get their pits from canning factories because they can get them cheap, though they know they are the product of trees where yellows exist and are liable to scatter and perpetuate that disease. But the temptation to fraud is not in using cheap stock alone. They frequently have on hand a surplus of varieties that are, from some cause, unsalable, or for which there is little demand. They may be at the same time short of some variety that is in great demand and that is hard to get. It is human nature if a man has an unsalable thing on his hands, I don't care whether it is a horse or a tree, to try and get rid of it and make the most out of it he can, and herein comes in the temptation to substitute. Nearly every nurseryman's, or agent's, blank orders have this clause in (though, by the way, not one man in fifty who signs it ever notices it), if "you have not got the varieties called for, you may substitute others *you* think equally desirable." Here is a chance to work off the unsalable stock, they think it would be equally *desirable* for *them* at least to work off this stock and let the buyer have it. And has he not signed the order giving them at least a legal right to do this. And there are tree agents that are far less scrupulous than this. I have known them to take orders from people for choice and rare varieties of fruits at extravagant prices, and then go and buy the cheapest trees they could find and label them according to the varieties called for and give them to their customers. And even agents of respectable firms are perpetrating frauds, nearly as bad, almost every day by selling trees that they know (if they know anything about fruit) will not grow to produce fruit but will be a dead loss of both time and money to the buyer. I was up here in Muskoka 50 miles north of this a few weeks ago and saw trees planted out this fall of tender varieties, such as Greening and Baldwin apples, Bradshaw plums, Black Tartarian cherries, etc., that would not stand the climate here at Orillia, much less 50 miles north. What fruit grower is there that has not paid extravagant prices for new things advertized by nurserymen, which have proved to be of far less value than many old varieties they could get at half the price, or even positively worthless. But perhaps this is enough about the frauds of nurserymen and agents ; every grower here will recognize them. But what about the frauds of the growers ? Do they ever deceive in their fruit ? Do their packages always contain the varieties and quality represented to their customers. Is every basket sent to market as good on the bottom as it is on top ? Do all their quart measures hold two pints, or their peck baskets eight quarts ? Do their 10-lb. baskets of grapes weigh 160 ounces ? Are there any small or wormy samples in the middle of their apple barrels that ought not to be there ? Do they ever, when they show fruits at fairs as their own growing, borrow or steal from their neighbors, or deceive the judges by getting two prizes for fruit of different varieties and pick it all off the same tree ? I will leave them to answer these questions and pass on to those who sell fruits. The retailers have their reputation at stake and it would not do for them to deceive their regular customers much, and even though they do turn their berries over when they get stale to make them look fresh on top, and sometimes make mistakes in selling Belle pears for Bartletts, and other varieties of peaches for Crawfords, still they are usually pretty honest. But what about wholesale dealers and commission men ? Are they always above suspicion ? I have heard of some of the latter class that were not. They certainly have a great chance to defraud and I have heard of some who would take a commission from both buyer and seller and even sell at low prices to one another to speculate on. I hope, though, that this class is few, for it seems to me that if ever a man should be fair and honorable it should be when his fellow man puts confidence in him and entrusts him with property to dispose of and make returns for. And now a few words about manufacturers of canned fruits. I believe there are more frauds here than in any other department. I know there are many men in the business of canning, preserving and evaporating fruits that are above fraud, but the desire to make money is so strong in some they cannot resist the temptation. There is always a demand for certain varieties of fruit, such as Bartlett pears and Crawford peaches, and most people suppose when they buy a can of fruit labelled Bartlett or Crawford they have those varieties, but a large proportion of them are not grown on Bartlett or Crawford trees, but are some other kinds of white-fleshed pears and yellow peaches that are bought at a less price. But greater frauds are perpetrated in jams and jellies than in any other fruit preparations. The skins and cores of a large majority of the apples done up in canning and evaporating factories are ground up and made into cider, which with cheap sugar is made into jelly and flavored to imitate strawberry, raspberry, currant, quince, or any other kind of jelly, and put up in small pails and labelled and sold for such jellies. Some of our Yankee friends have even gone a little further and mixed hay and clover seeds with them and sold them for currant and berry jams. And how about wine makers ? Do they ever make sparkling champagne out of cider, or pure native wines out of anything but grapes ? I knew a man, a few years ago when grapes were not as plentiful as they are now, who made large quantities of what he called wine out of rhubarb, and at the same time some out of grapes. But he never sold anything but pure grape wine. Now, are there any frauds among the consumers of fruit. Do boarding-house keepers ever use any of these cheap jams and jellies because they are cheap, knowing them to be frauds ? Do hotels ever use nice colored Ben Davis apples, Champion grapes, etc., on their tables because they will last longer than others of better quality.

I don't suppose any of you here will plead guilty to these frauds, but none will deny that they do exist. The question is, what are you going to do about it ? Is there any remedy ?

NEW FRUITS AT OTTAWA.

APPLES.

A paper on NEW FRUITS was read by Prof. John Craig, Central Experimental Farm, Ottawa :

McMAHAN WHITE : From A. L. Hatch, Ithaca, Wis. This variety has already been noted in the report of the Central Experimental Farm and I would again draw attention to some of its merits as an apple of value for regions where Northern Spy, Ribston, and Greening cannot be grown profitably on account of their inability to withstand the winter cold. It has proved, so far, a remarkably vigorous and healthy grower, free from any of the defects characteristic of varieties unadapted to this climate. It has borne moderate crops for the past two years. The fruit is large, smooth and attractive. Quality medium, season October to January.

SCOTT'S WINTER : From Dr. T. H. Hoskins, Newport, Vermont, U. S. This is an apple belonging to essentially the same class as the last in regard to the locality in which it should be cultivated.

The fruit is medium to small, handsomely colored ; quality only medium, its acidity being very pronounced. As a keeping variety it excels. Season, February to May for culinary purposes.

McINTOSH RED : I mention this to emphasize some of its strong as well as weak points. Tree fairly hardy ; quality first-class, appearance handsome, season that of the Famense or a trifle later, but like the Fameuse it falls an easy prey to the apple spot fungus (*Fusicladium*) and no grower should plant it without first making up his mind to deal vigorously with the enemy.

HAAS OR FALL QUEEN : So mentioned not for its value as a fruit, which is very slight—but for the use that can be made of it as a top working stock. For this purpose it possesses many desirable qualifications, and I believe it safe to say that Ribstons, Blenheims and Kings could be profitably grown on this with possibly increased fruitfulness in districts where they cannot be grown upon their own stocks.

WINTER DUCHESS : Has proved to be a handsome fall apple of fair quality, but will hardly compete with Wealthy, which comes in at the same season.

SALOME : Is a much advertised variety from Illinois. The tree is a round-topped, fairly vigorous grower, hardy at Ottawa. Fruit medium to large, round, green with rarely a blush. Mild sub-acid in flavor. An apple without striking characteristics, but evidently a keeper.

GIDEON : From Peter M. Gideon, Excelsior, Minn., U. S. Of the same parentage as Wealthy, but more vigorous in growth with larger leaves. The fruit is of the size of Wealthy, but much less highly colored. It holds to the tree better and may be considered nearly equal in quality. Where McMahan is grown this variety need not be included.

To attempt a descriptive list of all the Russian varieties which have fruited during the year would make an exceedingly lengthy catalogue, and with our present knowledge could not be of much value. A large percentage of the varieties in the test orchard have been seriously injured by blight during the past two years. Among the members of the Hibernal family, *Cross* from Voronesh, Russia, and *Romna* are handsome fall apples. The fruit is large, coarse in quality, but valuable for cooking. They bear heavily and annually.

LONGFIELD : Is making itself appreciated wherever planted on account of its early and remarkably heavy bearing habits. *English Pippin* is of the type and often confounded with this variety. Longfield is undoubtedly one of the best in quality of all the Russians. The fruit is medium or below in size, round, smooth and regular, yellow with a bright blush on one side. The flesh is white, crisp, sub-acid and good. Under favorable circumstances, as grown in the Province of Quebec, it keeps till March. As a home use and near market apple it has great value. Like the Fameuse, it lacks the points which constitute the essential requisites for an export fruit. To obtain the best results the fruit should be thinned as the tree is likely to overbear.

Of the Russian apples imported as scions by the Fruit Growers' Association in 1890, I shall hope to make a report upon the fruit of many of these next year. *Sara-synap*, one of the most noted winter varieties, fruited as a top graft the past season. The specimens secured were disappointingly small. Of the shape and appearance of Ben Davis. Quality poor; season mid-winter.

PLUMS.

Of these I wish to draw attention to a few varieties which seem worthy of special reference.

HAWKEYE: (*P. Americana*) This has already been mentioned in a previous report to the Society, but no apology is needed for this repetition as it is proving quite equal to the task of making itself appreciated. The tree is a strong grower, which is characteristic of the type, and a remarkably heavy bearer. The fruit is large, round, handsome, purplish red; quality fair. The skin is thick enough to allow of its being marketed in good condition. Season, the middle of September. It should be planted where DeSoto is thought desirable.

STODDARD: (*P. Americana*) From C. G. Patten, Charles City, Ia., U. S. Answers to same general description as the last, but is somewhat later in ripening. Among the Russian plums which have fruited two varieties, so far, are worthy of trial.

(1) MOLDAVKA: This was obtained from Prof. Budd, of Iowa, in 1888. The tree is a round topped, fairly vigorous grower. Shoots large, of a purplish color. It has not been injured by winter so far as have many of the other varieties of *P. domestica* in the test orchard.

Fruit large, one and three-quarters by one and five-eighth inches, oval and somewhat pointed, color dull brownish purple, covered with thick, blue bloom. Stem short, stout, set in a deep round cavity; suture terminates in a protuberance on one side. Flesh greenish yellow, moderately firm and juicy, mildly sub-acid, not highly flavored, but of fair quality. Pit medium size, oval, firmly attached to flesh. Ripe, September 5, 1894. Thus far it has not proved a heavy bearer.

EARLY RED: (*P. domestica*) From Prof. Budd. Tree of slow growth, twigs slender, leaves small, hardy. Fruit medium size, oval, dark red with blue bloom. Flesh greenish, firm, juicy; quality fair to good. Pit firmly attached. This variety has borne light annual crops for three years, and appears promising for the north.

CHERRIES.

I have to report in this connection that the trees of Koslov Bush Morello, imported by the Association, a portion of which were placed in charge of the horticulturist at Ottawa, have proved hardy, but exhibit considerable variation in habit of growth and character of leaf and bud. A few blossoms last year, but set no fruit. A large number blossomed the past season, and some fruit matured. An examination of the blossoms disclosed the fact that many of them possessed abortive stamens, which may account for the fruit setting very lightly. Samples secured were of small size, bright red, heart shaped, flesh soft and rather astringent. Pit large, altogether not promising so far. But it is not fair to base an opinion on first fruits. I may say that Dr. Charles Saunders succeeded in crossing this with other forms of the Morello, and interesting results may be looked for from this union.

Most of the Russian and German cherries described in Bulletin No. 17 of the Experimental Farm, have realized our expectations in regard to hardiness and productiveness. The varieties specially recommended are being planted to a considerable extent, but would be more generally cultivated if the trees were easily obtainable.

GRAPES.

The past season was one of the most favorable for the thorough ripening of this fruit which has occurred within a decade. Fungous diseases were not severe, and were easily controlled with Bordeaux mixture. At the Central Canada Exhibition, held during the last week of September, 142 varieties were shown, of which number seventy-five were well ripened.

Farrell : A white grape, mentioned in the report of the Association last year, produced in abundance enormous bunches of fruit upon vines planted three years ago. The berries, which I said were small last year, were much larger this season, and while the fruit did not reach perfect maturity, yet it gave assurance of good quality. It should be tested in our best grape growing districts.

Brilliant : Of T. V. Munson, a cross from Delaware and Lindley, is a promising red variety for home use. It does not seem sufficiently vigorous or productive for market. But our vines are yet young.

Peabody : A seedling of Clinton, raised by J. H. Ricketts, is by no means a new variety, but is mentioned here with a view of dilating on its good points.

(1) It has borne heavily and has not been affected by mildew, though to a slight extent by anthracnose.

(2) The fruit ripens every year at Ottawa, and the berry holds well to the bunch.

(3) Bunch large, well shouldered ; berries medium size, black oval ; quality first-class, combining a sprightly acid with a rich vinous flavor. After eating fruit of Niagara or of the Rogers varieties, a bunch of Peabody is positively refreshing.

Secretary : Produced by J. H. Ricketts, Newburgh, N. Y., by crossing Clinton with Muscat-Hamburg. This variety yielded remarkably fine bunches the past season.

Bunch and berry medium size, the latter oval ; skin moderately thick ; pulp very meaty and of an exceedingly pleasant acid. Seeds small, two or three in each berry. On account of its meaty character of flesh, it keeps well. This variety combines in a remarkable manner in both vine and fruit, the good qualities of the European and American grapes. It is not likely to become commercial. It ripens with the Delaware.

Mills : Might be classed with it.

RASPBERRIES.

As a market berry nothing better among reds than Cuthbert has yet appeared. Gladstone, Superlative, and Beaconsfield of the *Rubus Idaeus* or European class have fruited, but do not appear promising, and will no doubt remain in the amateur list on account of lack of productiveness.

Of black caps, Older, mentioned last year, easily retained first place, both for productiveness and quality. The plant is also more easily kept in form than other members of this division.

STRAWBERRIES.

One hundred and ten varieties were tested this year. The following varieties gave the largest yields, and are named in order of productiveness : Crescent, Beverly, Jas. Vick, Warfield, Stayman's No. 1, Van Deman, Williams, New Dominion, Beder Wood, Haverland, Parker Earle, Bubach. Each variety consisted of a row sixty feet long. The highest yield was 40 boxes and the lowest 24, of the varieties mentioned.

Timbrell : Gave promise of productiveness. It is early, of fair quality and moderately firm, but its very dark colour is against it as a market berry. The plant seems quite vigorous.

ENGLISH GOOSEBERRIES.

In closing this hasty review of the newer fruits, I would like to call attention to a class of small fruits not new, but unfortunately frequently overlooked. I refer to the

English Gooseberry. This has been a neglected fruit partly on account of unadaptability to all soils, and partly owing to its susceptibility to gooseberry mildew. Now that this disease can be cheaply prevented by spraying, and given a patch of clay or heavy loam, there is no reason or no excuse for slighting this luscious fruit. Gooseberries stewed, gooseberries in jelly and gooseberry tarts are all very nice in their way, but are not to be compared with well ripened berries in their natural state. Plant them on clay soil, where the snow lies deeply; spray and reap your reward, which will surely come.

A. M. Smith: Have you tried any Japan plums at Ottawa?

Prof. Craig: Yes, we have tried them. When the plum orchard was first set out all the varieties then distributed were planted in it. They all died out within three years excepting one variety which lived and bore fruit for two years, and then died.

A. M. Smith: Do you know the number of the plum?

Prof. Craig: This variety has since been identified in New York state and distributed under the name of *Willard*. It is one of the earliest of all the Japan plums.

Members: Have you experimented with blackberries.

Prof. Craig: Yes, we have about thirty under list, but we find it necessary to lay them down in winter, to get the best results.

APPLES FOR NORTHERN ONTARIO.

By Mr. J. H. Tool, of Orillia.

I see by the programme that I am expected to advise you as to what would be the best kind of apples to plant in Northern Ontario. If my memory serves me right it was for this locality—East Simcoe—that I proposed to speak. I was never in *Northern* Ontario and an apple which might do exceedingly well here might, and very likely would prove a failure "up North." We hardly like to have it said that Orillia is in Northern Ontario; but I do think that we are just in about the right spot to grow apples for Northern Ontario, and the fruit table that we present to this meeting of the Association shows that we only need to plant and grow the right kinds to be able to supply not only Northern Ontario with choice apples, but also to send a good many into the more southern sections of the Province. Since I have taken an interest in our Horticultural Society the quality of the fruit shown at our fall fair has improved at a wonderful pace with—as regards apples—a corresponding increase in the quantity and also in number of standard varieties; there is still room for improvement not only in quality but for a much greater quantity. The great mistake that has been made here is in planting too many summer and fall apples and going in for everything that is new and high-priced, especially if the nursery agent claims it to be something extra. I am not driving at friend Fisher now, I do not think he is any worse than the rest of the agents.

But, now that we have the Experimental Stations I suppose that in a few years we will be able to now just what to plant in every section to give the best results, especially if the Government will pass a law that no new kinds shall be sold as *first-class* kinds until they have been thoroughly tested at the stations and proven to be worth planting. I will now just speak of a few kinds of apples that apparently are doing well in this locality: In fall apples the "Duchess" does the best of all, but we already have too many of them planted, it is, however, an excellent tree to graft less hardy kinds on. The "Wealthy" is doing exceedingly well and bears early, being later than the "Duchess." I would prefer to plant it largely; the "Wealthy" keeps *well* until the middle of December; in the Association's tables it is classed as a winter apple; this should be changed. The "Snow" suits this locality well, quite hardy and bears well, but the last few years it has been liable to scab pretty badly; I have used the *Bordeaux* mixture on mine this year with fair results. The old "Colvert" is hardy, a good bearer, and almost becomes a winter apple when grown here; it is a first rate fall apple for this locality; I think that is about as many fall apples as it is desirable to plant. The great trouble in growing winter apple trees here is, I believe, in the way our winters come on; the ground is seldom frozen to any depth, before it is covered with snow—and often the ground is soft all the winter—then in spring growth starts too soon and trees are killed. It is not "winter killed" with us, but "spring killed;" and all trees that grow late in the fall are pretty sure to get nipped either with a sudden coming on of winter or too early growth in spring. The "Golden Russet" and "Roxbury Russet" are both doing well here; the "Ribston pippin" does fairly well and no orchard should be without it. There were some very fine "Blenheim Orange pippins" shown here this fall, the owner says the trees bear well. The "Talman Sweet" does well and is an excellent tree to graft other kinds on that are not so hardy. We have had some fine samples of the "Wagener" shown at the fair, it is a choice apple, but I do not think it is hardy enough for here; I had two trees, they both "winter killed;" but I have some fine grafts of it growing in a "Duchess." I might say I have 30 or 35 different kinds of apples grafted as an experiment, but only two or three of them have yet commenced to bear. Of the newer sorts that are bearing in this neighbourhood the best in my estimation is the "Pewaukee," it is a fine hardy tree, bears every year with me, and I consider it a choice apple. The "Mann" is just beginning to bear, a very fine looking apple, the trees appear to be hardy and thrifty and I think it will be worth planting. The "Fallawater" is another just coming in, a very thrifty growing tree, and a beautiful apple; and if it does not prove to be a shy bearer, should be in every orchard. The "Ben Davis" does exceedingly well here, sells first-class so far, and on account of its good bearing and keeping qualities is a desirable tree to plant. The "Twenty-ounce pippin" does very well and is a good keeper for a fall apple and rather desirable to plant. There is one more that I wish to speak of, it is all right in quality, the tree is hardy, a thrifty grower and bears every year, but as to size and appearance, *there it is:* (it is the "Wallbridge") about as good-looking and as big as they can be grown about here, and if that is the best that can be done, one tree is enough for anyone to have—it was boomed by the nursery men, 8 or 10 years ago and a good many were planted.

If every farmer in East Simcoe who has 50 or 100 acres would plant 5 or 10 acres to orchard, of 5 or 6 of the best sorts I have named above and take care of them when planted they could say in 12 years from now that I gave them the best advice, at the Fruit Grower's Association meeting in Orillia, that they ever had and all for nothing.

The Secretary read an invitation from the Medical Superintendent of the Ontario Asylum for Idiots to the Association to visit that institution during the time of the members in the town.

SECOND DAY.—MORNING SESSION.

WEDNESDAY MORNING, 11 o'clock.

A paper on "How may the membership of the Fruit Growers' Association of Ontario be increased," was read by Mr. Thos. Beall, of Lindsay.

THE MEMBERSHIP OF THE FRUIT GROWER'S ASSOCIATION OF ONTARIO SHOULD BE INCREASED.

BY THOMAS BEALL, LINDSAY.

To those who have given the subject due consideration, it seems incredible that the Horticultural Journal and Annual Report of this Association, when it contains so much useful information to fruit growers, whether they be villagers having their quarter-acre lot, or orchardists having large farms, should have such a limited circulation. The membership, which is little over 2,000, should, and may be increased in a few years to ten times that number.

Upon a careful survey of the subject for the purpose of finding some way of materially increasing our membership, it has been found that the means by which it may be accomplished is already provided in the Agriculture and Arts Act.

The provisions of the Act relating to this subject are upon such broad and liberal principles that the reader of the Act may well be astonished that every township and horticultural society in the province has not, long ago, become affiliated with this Association. Sections 46, 47 and 48 provide for the organization and maintenance of township and horticultural societies in a liberal manner. It is quite evident, however, that the officers and members of these societies have generally given no attention to the provisions of the Act relating to the several purposes to which the money may be applied, and I here copy in full sections 37, so as to give its provisions prominence.

"37—(1) The objects of the said societies, and of the township societies in connection therewith, shall be to encourage improvement in agriculture, horticulture, manufacture, and the useful arts."

"(*a*) By holding meetings for discussion and for hearing lectures on subjects connected with the theory and practice of improved husbandry or other industrial processes."

"(*b*) By promoting the circulation of agricultural, horticultural and mechanical periodicals."

"(*c*) By importing and otherwise procuring seeds, plants and animals of new and valuable kinds."

"(*d*) By offering prizes for essays on questions of scientific inquiry relating to agriculture, horticulture, manufactures, and the useful arts."

"(*e*) By awarding premiums for excellence in the raising or introduction of stock, the invention or improvement of agricultural or horticultural implements and machinery, the production of grain and of all kinds of vegetables, plants, flowers and fruits, and generally for excellence in any agricultural or horticultural production or operation, article of manufacture or work of art."

"(2) The objects of horticultural societies shall be the same as those of district and township agricultural societies, but in relation to horticulture and arts only."

It is evident, therefore, that there are five ways in which the funds of these societies may be used; these may be summarized as follows, viz:

1. By holding meetings for discussing and for hearing lectures on subjects, connected with the objects of the society.
2. By promoting the circulation of agricultural and horticultural literature.
3. By importing and otherwise procuring new and valuable seeds, plants, etc.
4. By giving prizes for essays on subjects connected with the objects of the society.
5. For holding exhibitions and awarding premiums for things connected with agriculture, horticulture, etc.

The fifth and last sub-division—that permitting the holding of exhibitions—is the only one generally acted on, but it must be apparent that if the funds were expended as provided by either of the other sub-divisions, or partly under all of them, the expenditure would be as legal as under the fifth.

It is difficult to understand why towns and villages have not further availed themselves of the provisions of the Act and established horticultural societies in their midst, except on the supposition that the directors of such societies supposed they had of necessity to expend the funds in holding exhibitions, and in no other way, while they knew that but little or no public good has resulted for many years from such local exhibitions: and this applies also to many of the township societies. Not to all: some of them are yet doing good work.

There are, however, many other reasons why so little interest is taken in township and horticultural societies under the present prevailing system of management. It is well known that the labor and care of managing such exhibitions devolves mostly on the same persons from year to year in each society, and they must also expend much time every year in begging their fellow-citizens for their membership fees. Not a pleasant job at best, and this unpleasantness is greatly increased by the knowledge that but comparatively few of the members partake of the pecuniary benefits resulting from such exhibitions. Those who receive the prize money generally render the least assistance.

The suggestions offered as a remedy for this state of affairs are: That township and horticultural fairs or exhibitions—as a rule—should be given up, and that the provisions of the Act be so administered that each and every member of such societies should receive equal advantages, and this can be done by expending the societies, money as provided by any or all of the first four sub-divisions of sub-sec. 1 of sec. 37 of the Act. By referring to these sub-divisions and to sections 58 and 59, it will be seen that under intelligent management every member of all such societies may also be a member of the Fruit Growers' Association which will entitle him to the Horticultural Journal for one year. bound copy of the report and a share in its distribution of plants, etc. He may also receive two or three dollars' worth of the choicest plants, bulbs, shrubs or trees procurable; all for the usual fee of one dollar, and the directors should still have funds on hand sufficient to defray the cost of holding two or three meetings each year for discussing local agricultural and horticultural matters.

If these suggestions are carried into effect the Fruit Growers' Association of Ontario will very soon number 10,000 members, and who can estimate the benefits which would be derived by the circulation of so many thousands of copies of our publication amongst an interested agricultural population? At present the circulation of our journal is mostly confined to our towns and villages. The agricultural population—those who are most in need of the information sent out, are not yet reached.

When the agricultural population of that portion of Ontario embraced between the 44th and 45th degrees of north latitude become fully aware of its possibilities for the production of fruit, and have proven by practical experience that in this belt there can be profitably produced the best winter apples on this continent; then the province of Ontario will become known as the best home for the surplus Anglo-Saxon race on the face of this globe.

The Secretary: I am inclined to think that we as an association approve of the lines laid down by Mr. Beall in this paper, and approve of the exertions of the executive committee in carrying out this plan to a certain extent. This has been tried during the last year or two and where the local organizations have been formed under this scheme, they have worked most succesfully, and appear to be permanent organizations.

Mr. Race: You have formed several local societies is this vicinity, have you not?

Mr. Beall: I have excellent societies at Lindsay and Port Hope.

REPORT OF AFFILIATED SOCIETIES.

The Secretary: There are several affiliated societies, and we have not sufficiently recognized their existence in a public way. We want delegates from those societies to come to our meetings and tell us what they are doing. To-day we have two representatives from the Burlington Horticultural Society, Mr. Geo. Fisher and Mr. A. W. Peart.

Mr. Peart (Burlington): I may say that our Burlington Horticultural Society was organized some five years ago, in 1889. The first year we had a very small membership, probably fifteen or sixteen, but from that time down to the present, we have been gradually increasing, until now we have over seventy members in good standing. I may say that we are not organized under the Agriculture and Arts Act, although we are affiliated with the Fruit Growers' Association. One reason is that the majority of the fruit growers in that district live in the township of Nelson, and one of the provisions of the Agriculture and Arts Act is that the majority of the directors of an Association must live within the municipality of the village or town, as the case may be. I will point out another difficulty; for instance, we have different departments of fruits and a director for each department, a director for pears, etc. At our annual meeting it is the duty of each director to give a report on his particular department for the past year. I think you will all agree with me, that it would be rather difficult for us to organize under the Agriculture and Arts Act. I do not know that I have anything else to report. Our society is strong and is growing all the time. We have to compete with other societies, as the Nelson Agricultural Society and the Farmers' Grange, but with a little effort we increase our membership. We send in at least fifty names to the secretary of the Fruit Growers' Association of Ontario.

The SECRETARY : You have frequent meetings ?

A. W. PEART : We meet four times besides the annual meeting. The annual meeting is held on the last Tuesday in January. We have papers or addresses given by practical members of our Society and followed by discussion. We consider that this local association is a grand thing. There is no doubt that the formation of the Burlington Horticultural Society has stimulated the fruit industry in that locality.

The SECRETARY : You might mention the papers you have had this last year.

A. W. PEART : This last year we have considered the subject of spraying, the apple crop of last year in its different bearings, the extent of crop and quantity of fruit. This was applied to all the different fruits. Then we have had papers on current culture, black knot, and I may say here that in our township we are taking vigorous steps to stamp out the plum knot. We have taken advantage of the new Act concerning the knot and have had two inspectors appointed for the township of Nelson. The black knot is about running our cherry trees. A few years ago the black knot swept through that part of the country ruining the plum trees, but did not touch the cherry trees. New plum trees are now being planted out, but red cherry trees are dying from the effects of black knot.

Mr. RACE : That seems to raise the question : Is the fungus the same on the plum and the cherry ?

Mr. PANTON : The same fungus causes both. It is a disgrace for anyone to allow it to spread. Wherever a knot is seen, it should be destroyed at once.

Mr. C. L. STEPHENS (Secretary Orillia Horticultural Society) : Our society which was established about eight years ago, is not conducted along the lines laid down by Mr. Beall. The exhibits of fruit at our fall fairs have increased five hundred fold, both in quantity and quality of fruit. We get just enough members, chiefly in the town, to enable us to draw a government grant. We then affiliate with the electoral society and throw all our funds into that, but retain control of them. We have not affiliated with the Fruit Growers' Association, but it is our intention to do so.

Mr. RACE : Mr. Beall made the statement that the publications of our Association was limited largely to towns and cities. That is true to a large extent, but I find this, that wherever our journal has circulated there is a more lively interest taken in fruit growing. Mr. Stephens has given us a new idea in uniting, as they have done, with the district Association, for by that means they are able to give larger prizes which is more encouragement to the farmers to bring out their fruit.

REPORT ON GRAPE CATALOGUE, 1894.

The SECRETARY : Mr. President, I propose that we take up the grape catalogue. Mr. M. Pettit, as one of the experimenters, in his report does not agree altogether with values given in our catalogue. It is quite open to this meeting to make any changes. Mr. Pettit will suggest some.

Mr. M. Pettit here read the following list of proposed changes :

The Executive Committee, of Winona Experiment Station, viz.: Messrs. M. Pettit, Wm. Orr and L. Woolverton, with Mr. A. M. Smith, director of adjoining district in consultation, after carefully comparing the report of this station on varieties of grapes with grape catalogue, published by the Ontario Fruit Growers' Association, have decided that the values of certain varieties in the latter should be changed as follows :

Varieties.	Catalogue Value.		Change Recommended.	
	Table.	Market.	Table.	Market.
August Giant	1	3	5	5
Barry	5	6	7	7
Catawba	9	8	9	9
Creveling	6	3	6	4
Dracut Amber	1	7	2	4
Duchess	1	7	5	6
Eumelan	6	4	6	5
Lady	7	5	8	8
Massasoit	6	5	6	7

The minor discrepancies between the Experiment Station report and that of our catalogue, we think it unnecessary to attempt to harmonize, because a little difference in the absolute value of a grape is observable in various soils and climates.

Mr. M. Pettit : I might just say that in giving the table value of these grapes, that they are judged from the standpoint of grapes grown on clay soil, which makes considerable difference in the flavor. August Giant, a cross between Black Hamburg and Marion. A very showy grape for the table, and, with me, of good flavor. I would consider it marked entirely too low as a table grape. I would raise it to five for a dessert grape.

Mr. R. B. Whyte : I think that the general experience would be against five for dessert. On light soil it is not good. If it is equal to five on clay soil, and two on light soil, we had better give it the average.

Mr. Pettit : The Barry is equally as good as the Wilder which is considered one of the best of Rogers black, both in flavor and shipping qualities. Catawba is one of the choicest grapes we have. In the market it outsells any other grape.

Mr. McNeill : I would object a little to the market value. In the London market last October I could only get 3c. for the finest Catawbas, while Niagara, and other grapes were selling for 4c. I also received a telegram from Ottawa that they were not selling well there.

Mr. Pettit : I cannot understand that ; I sent Catawbas to Ottawa at 5c. f. o. b. There has been no year for the last ten years when my Catawbas have not brought me at least 5c. a pound. Dracut Amber is a very poor flavored grape. Duchess is a good grape. It is in white what the Delaware is among red grapes, and is marked too low.

A. McNeill : You have different taste. I would not consider it worth more than two or three at the most.

M. Pettit : The Eumelan is an early black grape and ripens before Concord which makes it valuable in the market. Lady is the first white grape in the market. It is a good flavored grape. It is also a choice dessert grape.

Thos Beall : Do you think it should rate higher than Jessica for table use.

Mr. Pettit : Yes. It is a more showy grape, and better in flavor to my mind.

The Secretary : In moving that as an Association we approve of Mr. Pettit's report, I might explain that Mr. Pettit, as one of the experimenters appointed by the Board of Control of the Ontario Fruit Experiment Stations, in making out his excellent report, does not agree in the values of some of the grapes with the published report of our Association, and, in order to harmonize them as far as possible, he has suggested these changes.

A. M. Smith seconded the motion.

A. H. Pettit: We are continually changing these standards. Why would it not be well to name experimenters in the southern, western and northern districts and have these representatives meet here on one of the days of our meeting and bring in a report for the several districts.

The Secretary: Allow me to say that Mr. Pettit and Mr. Caston have met and agreed upon the changes now before us.

The motion was carried.

APPLE AND PEAR CATALOGUE.

The Secretary: Mr. President, the report on changes in apples and pears will be given by Mr. Caston. There are four stations established and one of them is at Craighurst and is devoted to apples and another at Trenton devoted to apples and pears. There two experimenters have met and agreed upon the following report:

Recommendation from Experimenters Concerning Fruit Catalogue.

We, the experimenters of the Fruit Experiment Stations of Ontario, having considered carefully the values of certain varieties of apples and pears, recommend the following changes:

Varieties.	Dessert.	Cooking.	Home.	Foreign.
Buffam pear	5	....	4	
Apples.				
Tetofsky	7	9	6	0
Tolman Sweet	6	5	3	4
St. Lawrence	7	8	8	5
Hurlbut	8	8	8	8
Fameuse	10	5	10	8
Grand Sultan	5	8	6	6
Benoni.	10	8	4	7
Ben Davis	1	3	8	9
Beauty of Kent	6	6	8	7
Bailey Sweet	4	8	4	4
Duchess of Oldenburg	6	10	10	10
La Rue	4	9	8	8
Colvert	3	9	7	8
Maiden's Blush	3	8	9	8
Pewaukee	6	8	8	8
McIntosh Red	10	7	7	8

Signed,

G. C. Caston.
W. W. Hillborn.
W. H. Dempsey.
M. Pettit.

Mr. Caston: In the list the Ben Davis apple is not rated at all for dessert. A great many shippers through the country would tell you that they make more money out of Ben Davis because of its color. The tree bears early and abundantly, and stands shipment to England better than any other apple.

A. H. Pettit: In Wisconsin, its native country, it is rated very low. It is not a dessert apple.

J. A. Morton: I object to putting it at 5 for cooking when you give the Baldwin only five for cooking. The Baldwin is a better apple than the Ben Davis, although neither of them is a very good keeper.

A MEMBER: My opinion of Ben Davis is that you cannot eat it at all. It is a wooden apple, but I am told it is a good shipper and that it will keep until June.

A. McNEIL: The Ben Davis in January or February is a good apple, and certainly equal to the Baldwin. We have not an apple growing section (Windsor); our apples mature too soon. We cannot grow winter apples, and it is possible that the Ben Davis may be a different apple with us, but certainly in its season it is good.

Moved and seconded that it be raised one point for dessert. Carried.

W. H. DEMPSEY: I think it is quite right that for some parts of Ontario the Ben Davis should not be estimated any higher, because I do not think it is good in flavor in any place except the eastern and northern parts. The Ben Davis is really better than many people think, but a great many people have got prejudiced against it. I rate it three for cooking.

Mr. A. H. PETTIT: You have decided that the Ben Davis is worth one for dessert, three for cooking. Now for home market it is valued eight. I think you must cut that down a little.

J. A. MORTON: I do not think the quality should be considered in estimating its market value. As people become educated enough to know it, it may make a difference. The question is, compared with other apples what is its value.

A MEMBER: I saw a barrel of Ben Davis sold for $4 in the town of Lindsay. I would say it is a good apple for the home market.

G. C. CASTON: The Duchess of Oldenburg we would raise from two to six for dessert, ten for cooking, ten for home market and ten for foreign market.

Mr. MORTON: Do you think that ten is rather high for foreign market?

Mr. CASTON: Possibly so.

The SECRETARY: Mr. Shepperd, of Montreal, shipped this apple to England, in the Cochrane case, and received a very high price for it.

A MEMBER: Mr. Allan told me that he sold them in England at 18s. 6d.

Mr. CASTON: I might sum it up as the very best apple introduced into Canada. We next have La Rue. We suggest four for dessert, nine for cooking, eight for home market and eight for foreign market. It is a splendid cooking apple. It is really not a good dessert apple as it is rather too large.

Mr. CASTON: Pewaukee, we have put it at six for dessert, six for cooking, eight for home market and eight for foreign market. I presume a good many people do not know this apple in its right season.

J. H. TOOL: I do not think you have marked it high enough for dessert. I move that it be put eight for dessert.

J. A. MORTON: I think that is too high. One thing against it is the looks of the apple. It is too big and has an irregular shape. Two elements should be taken into consideration, not only quality but also the appearance of the apple. I do not think it is up to the standard in quality. I think it should be valued at six.

This was agreed to.

Mr. CASTON: The Fameuse we have valued at ten for dessert, eight for cooking, nine for home market and ten for foreign market.

J. A. Morton: If you are giving the Fameuse ten, what are you going to give the McIntosh Red. Every one that I have heard speak of them places the McIntosh Red far ahead of the Fameuse.

A resolution was duly passed, rating the Fameuse ten for dessert, five for cooking, ten for home market and eight for foreign.

Mr. CASTON: There is no apple yet that takes the place of Fameuse as a dessert apple. Talman Sweet we put at six for dessert, nothing for cooking, three for home market and four for foreign market. My experience is that you cannot sell it at all.

A. M. Smith, St. Catharines: It is one of the best baking apples. The Dutch use it largely for apple butter.

Mr. Race, Mitchell: I buy more Talman Sweets every year than any other apple and use it for baking.

Mr. Smith: I move we accept these changes except that for cooking it be raised to five. (Carried.)

A Member: I move that the McIntosh Red be raised to ten for dessert. It is one of the best apples we have for dessert.

Mr. Whyte: It is a very fine apple. I second the motion. (Carried.)

J. P. Cockburn: I suggest that the Wealthy apples be changed from winter to fall in its classification. (Carried.)

SECOND DAY—AFTERNOON SESSION.

The President: We are very pleased to see that there are so many gathered in so early. We will now take Mr. Beadle's resolution.

Mr. Beadle: The committee on resolutions desires to present this resolution to the meeting: "Resolved, that the thanks of the association be given to Prof. Panton for his very valuable and instructive lecture on the Fungi. We desire to express to him our great appreciation of the great kindness shown by him in coming to our meeting and entertaining us for an hour at so great inconvenience and with such entire self-forgetfulness." Carried.

Prof. Panton thanked the members for the very cordial manner in which they expressed their appreciation of his effort. He did not know when he had stood before a more appreciative audience.

SCORE CARDS FOR JUDGING FRUITS.

The President: I dare say most of you will have recognized the difficulty of securing united judgment of fruits at our fall fairs. The secretary will now deal with that question.

Secretary Woolverton then read the paper as follows:

Already the Ontario Fruit Growers' Association has taken steps to secure greater uniformity and fairness in the judging of fruits at agricultural and horticultural exhibitions throughout Ontario. The fruit catalogue published annually in our report, is referred to by intelligent judges for final appeal in disputes concerning the value of varieties, but, it is not, however, used as widely as it should be. Some judges make free use of it in judging their collections, while others pay no attention whatever to it and jump at hasty conclusions.

I think it most important that we should pursue this matter still further until we are able to furnish every secretary of every agricultural and horticultural society with a score card for the use of their judges.

True, it requires a great deal more time to judge fruit in this careful way, assigning to each variety its value on some systematic basis, than it does to merely jump at conclusions from the general appearance of the collections, but such careful work amply repays the time it occupies. As conducted at present, our fairs fail entirely in accomplishing the end for which they were intended. They do little or nothing in educating the public with regard to the real value of the varieties shown, or in directing planters concerning the most profitable or most useful kinds to plant for the various purposes. No doubt there are some judges who take into consideration more than merely the appearance of the collections, but, if they do base their decision on some sensible list of points, the public do not know what these are and consequently are no wiser in this respect than they were before. Now, if a score card were used with clearly defined points showing every investigator the points taken into consideration in giving the decision, and showing the real value of each variety as made up of the various points of merit which it possesses, the public would take great interest in reading these over and would soon become educated regarding the important points which guide the judges in estimating the value of varieties, and planters also who are about to plant orchards would be able to do this much more intelligently after having made a study of the exhibits at the various fairs.

I do not propose to give you a form for a score card that would be beyond criticism. I simply place before you two or three forms with the object of stirring up that careful discussion on this subject which it so well deserves, and hope that either in the open meeting or by the aid of a committeee, we will be able to prepare such a score card as will secure the approval of this whole association. These should then be printed in quantity and a sample of them sent out to the secretary of each agricultural and horticultural society in our province.

I think it is important that not only the judges should use these, but also that the public should be fully acquainted with them, in order that the exhibits may be made with greater intelligence than they are at present.

Here is a sample of the card proposed for judging single plates of apples and pears:

Apples and Pears.	Value of points.	Score.
Form	10	
Size	10	
Color	10	
Freedom from blemishes	20	
Uniformity	20	
Quality	30	
Perfection	100	

Then for judging collections of apples and pears, I presume quite a different form, perhaps this one for a large, general collection:

Variety.	*Value of samples.	Catalogue value of variety.	Total points.
(For example.) Baldwin	5	22	27
To sum of total points add maximum of 10 for covering season.			

* 10 points as follows: form 1, size 2, color 2, clearness 3, uniformity 2.

On this card the list of varieties may be entered, the value of the sample shown, and the absolute value of the variety as shown in our apple or pear catalogue as the case may be. The sum of these will be the number of points gained by the variety in the collection and the total value of these sums will be the total value of the collection.

Thus, the value of the sample of Baldwin shown may be only five, out of a total of ten possible points, the absolute value of the variety as shown in our report is twenty-two, and adding these together we have twenty-seven as the total value of this variety in the collection.

I have made ten the maximum in this case, rather than one hundred, for the sake of simplicity. On a large collection it will be best to just keep in mind the relative value of the points, and to work out the value of each sample mentally on that basis.

For a collection of varieties for dessert purposes a somewhat different card should be used. Thus:

Variety.	*Value of samples.	Catalogue value of variety.	Total points.
(For example.) Baldwin............	5	2	7
To sum of total points add maximum of ten for covering season.			

* 10 points as follows: form 2, size 1, color 2, clearness 3, uniformity 2.

And for cooking, the following will be adapted:

Variety.	*Value of samples.	Catalogue value of variety.	Total points.
(For example.) Baldwin	5	5	10
To sum of total points add maximum of ten for covering season.			

* 10 points as follows: perfection of form 1, color 1, size 3, uniformity 2, freedom from blemishes 3.

In these two last forms instead of taking the total value as given in our catalogue, the value there given for dessert or cooking should be used respectively. Thus, the sample of Baldwin, which, on account of lack of color, lack of uniformity, and for blemishes, only has a value of five, gets two additional points only as a dessert apple; while for a cooking apple the same sample Baldwin is worth five marks, making the value of this variety in the collection ten, for cooking.

For judging grapes of course quite a different set of points must be observed from those used in judging apples and pears. I would propose for single plates:

Grapes.	Value of points.	Score.
Flavor.. .... -	30	
Form of bunch	10	
Size of bunch....................	15	
Size of berry	15	
Color	10	
Firmness..........	5	
Bloom	5	
Freedom from blemishes	10	
Perfection...............	100	

The following might be used for collections of grapes :

Variety.		*Value of sample.	Catalogue value of variety.	Total points.
Concord	For example.	8	21	29
Delaware		6	26	32
Lindley		5	28	33
Niagara		9	22	31
Pearl		8	4	12
				137
Add maximum of ten for covering season				6
				143

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*10 points as follows : flavor 3, form of bunch 1, size of bunch ½, size of berry 1½, color 1, firmness ½, bloom ½, freedom from blemish 1.

POTATOES AND TOMATOES.

The Massachusetts State Board of Agriculture has established a scale of points for judging vegetables. Pamphlet forms, containing cuts and scale of points for two or three of the finest varieties of all the different vegetables, are being issued for the use of the incorporated Agricultural Societies. This is one advance needed by all agricultural societies, as very often men are appointed to judge at shows who differ very widely in their ideal of a perfect specimen, and by having an authorized scale of points to guide them a much less unjust decision will often be given. As an example of their plan, we give scale of points given for "Beauty of Hebron" potatoes :

Size—Should be 4½ inches long and 3½ inches wide for perfection, 30 points.

Form—Should be according to engraving, as given in pamphlet, 30 points.

Smoothness—Free from deep pits, warts, or excrescences, 30 points.

Quality—Fresh appearances, freedom from coarseness, and bright color, 10 points.

Total 100 points.

The following is the scale of points for tomatoes :

Form—Should be according to engraving, 40 points.

Color—Should be bright red or purplish pink, according to variety, 30 points.

Size—Should be not less than 2½ inches and not more than 3½ inches in diameter, 15 points.

Quality—Firmness, ripeness, and freedom from green spots or cracks, 15 points.

As such a manner of judging fruits would entail a great deal more labor than the plan now adopted, I suggest that only one judge be appointed in each section, instead of three, as at present, and that this one judge be an expert and one who has the confidence of the exhibitors as well as of the authorities. Further, I recommend that this judge should be allowed the amount now paid to the three. In this way there would be sufficient compensation for the work done, and better work would therefore be secured. One judge would work almost as fast as three, and, if properly paid for his time, could afford to do his work well.

A committee was appointed by the meeting at Orillia to consider this subject and report. The committee recommended the adoption of the score cards, with the amendment that in awarding the points for every season, in collections the maximum be computed on a basis of five points for each variety shown in such collection, instead of allowing ten marks as a maximum in all cases.

Secretary **Woolverton**: I move that a committee of three be appointed to consider the score cards as proposed—one who has been judging grapes, one who has been judging apples, and so on.

Mr. **Beall** moved that the president, Murray Pettit, and A. H. Pettit be the Committee. Carried.

PROGRESS IN SPRAYING DURING 1894.

Mr. **John Craig**, Horticulturist Central Experimental Farm, Ottawa, read the following paper:

No line of work associated with the successful culture of fruits at the present time is charged with greater interest to the horticulturist than is the subject of this paper. It is also true that no other advance in horticultural practice has been so readily taken up by the more progressive and practical and discussed by the theoretical and procrastinating class. Third and fourth classes may be made of those who have tried without success the remedies recommended, and those who disbelieve and have not tried. But honest doubt should always be respected.

Again, there are few if any operations now included in the annual programme of the fruit grower the success of which is so dependent on conditions practically outside the control of the operator than is spraying. Meteorological conditions, as rain and wind, heat and cold, bear a marked influence on the results, and often discourage a beginner from carrying into practice good resolutions formed at the opening of the season. An unfavorable season will so frequently mar the effect of conscientious effort as to place in doubt the beneficial results, thus shaking the confidence of the beginner.

Before taking up the subject of this paper, namely, the result of the season's work, it might prove interesting to preface it with a brief history of the introduction of the practice of spraying.

History of the Practice of Spraying.

In 1882 Professor Millardet, an eminent botanist of Bordeaux, France, had his attention called to the fact that grape vines sprinkled with a mixture of bluestone and lime to deter the inroads of boys and vagrants, were much less attacked by mildew than other vines not so treated. Acting on the suggestion conveyed by this object lesson, he carried on experiments during 1883 and 1884, and gave to the public the result of his work on May 1st, 1885. As Mr. Fairchild, of the Department of Agriculture, Washington, says in an excellent article recently published on Bordeaux mixture as a fungicide: "It appears that to Millardet is due the credit of first correctly interpreting the immunity shown by the treated vines in Medoc, and of conceiving a practical method by which copper sulphate could be used as a remedy for the disease in question."

The news of this discovery was soon chronicled in America, and bulletins of recommendations were issued by the Department of Agriculture at Washington and the California experiment station early in 1886. The following two years gave to the public the results of experiments conducted in the United States, and established a formula for Bordeaux mixture which has been more or less generally accepted and has become in a measure a standard. This formula was recommended by Mr. Galloway, chief of the division of vegetable pathology at Washington, D.C., and consisted of 6 pounds of copper sulphate and four pounds of lime in twenty-two gallons of water. The first formula however, was much stronger than this and contained eighteen pounds of copper sulphate and about 30 pounds of lime to which was added 30 gallons of water. Such a mixture resembled a thick paste and was applied by means of wisps of straw or brooms. Many other mixtures were soon introduced and tried by the active American scientists, principally on account of the difficulty of applying the concentrated form of Bordeaux mixture. In the spring of 1890, the first year of the appointment of the writer as horticulturist to the Central Experimental Farm, Ottawa, experiments were planned and carried out in orchards at Abbotsford, Quebec. The experiments were designed to show the benefit of spraying with ammoniacal copper carbonate in varying proportions, copper sulphate of varying strength, and the value of hyposulphite of soda as a fungicide. The variety treated was Fameuse, and the results gained demonstrated the profit of spraying with ammoniacal copper carbonate of the strength since recommended by the horticultural division of the Experimental Farm. Experiments have been continued each year up to the present, but marked more or less according to season. In the initial stages of this work the important question of economy and ease of application in addition to the effectiveness had to be studied by the experimenters, so that a remedy, when discovered, might be practicable and thus commend itself generally to the public.

These experiments covered the trials of over thirty spraying mixtures, and among the fruit included were apple, pear, plum, cherry, peach, and the majority of the small fruits.

Owing to the difficulty of applying and the cost of making the concentrated Bordeaux mixture, many other copper salt compounds have been tried, with the result that many were discarded while a few were recommended for trial. Copper sulphate or bluestone having entered into all mixtures giving favorable results, the number of formulæ recommended have gradually lessened with each year's experience till at the present time, while we have yet much to learn, the fruit grower need not burden his mind with a bewildering array of recipes or formulæ, almost as numerous as the legion of enemies which attack his orchards and vineyards.

As a result of experiments conducted in 1892, the writer recommended a modified formula for the preparation of Bordeaux mixture. This was given to the public by means of bulletins and circulars during 1892 and 1893. The formula is as follows: Four pounds of copper sulphate, four pounds of lime and fifty gallons of water. The cost of this need not exceed one-half cent. per gallon, and admits of the addition and application of Paris green. At the same time coupled with this was ammoniacal copper carbonate, which will not be used as freely as Bordeaux mixture on account of its greater cost and the increased labor of preparing it. For spraying late in the season when stains on the fruit are undesirable, it is the most useful agent yet discovered. In copper sulphate we have the base or foundation of both the above mixtures, and a very effective fungicide to apply before the foliage appears. With this trio, backed up by intelligence and perseverance, the fruit grower may largely increase his orchard revenue.

Experimental Work in 1894.

I firmly believe that through the co-operation of the Fruit Growers' Association of Ontario, the value of this work has received such an emphatic confirmation that the resulting impetus will place the practice of spraying to lessen fungous injury, as well as insect attacks, on a plane well out of the reach of controversy. While the benefits arising from the practice have been satisfactorily proved by the writer, as well as by leading fruit growers, and the system strongly advocated, yet conflicting results obtained here and there continually threw a dark shadow, and gave rise to doubt and discussion. This, I am happy to say, culminated in a resolution moved by the retiring President, Mr. A. H. Pettit, at the last meeting of the society held at Peterboro'. This resolution read as follows: "That in the opinion of this meeting it is desirable that our Director of the experimental farms be requested to make during the coming season at several centres of fruit culture a public, practical test of the efficacy of the solution recommended for the prevention of the scab on apples." The Minister of Agriculture for the Dominion at once recognized the immense interests involved, and was pleased to authorize the experiments, the writer being commissioned to carry them out. Experiments were instituted at seven different centres in the Grimsby and St. Catharines districts. It is a pleasure to record the cordial spirit of co-operation manifested by the fruit growers of the Grimsby and St. Catharines districts and the helpful manner in which they facilitated the progress of the work. The inauguration of the experiments was unavoidably delayed till May 1st, which, on account of the abnormally early spring, was fully two weeks later than desirable. This, followed by the unprecedented and continuous rains during May and June, coupled with the scorching heat and drouth of mid-summer and autumn, all combined to form a season with conditions most unfavorable to obtaining even average results. Regarding the character of the weather, Mr. Wm. Orr, of Stony Creek, Ont., writing under date of June 18th says: "We have been laboring under almost unsurmountable difficulties in trying to carry out our spraying programme. It has rained every day, with one exception, for 21 days, and plowed ground has been like a mortar bed. It has even been impossible to get upon well under-drained land part of the time." The same condition of affairs is chronicled by Messrs. M. Pettit, A. H. Pettit, C. P. Carpenter and E. J. Woolverton in the Grimsby district. Writing from St. Catharines under date of June 5th, Mr. M. Burrell says: "Owing to the disastrous weather we have been at a standstill. For more than two weeks it has been raining daily, and not only has all farm work been suspended, but spraying operations have been impossible on account of the softness of the ground"

Mr. A. H. Pettit says, on June 20th: "We shall again go to spraying as soon as we can float a waggon with the barrel in it."

Following on the heels of the downpour came a period of ideal weather for the development of fungous growth. Never, to my knowledge, has the apple scab (*Fusicladium*) appeared in such a virulent form. The fungus coming before the fruit had much more than formed, attacked the foliage so severely as to cause it to resemble and be easily mistaken for the ordinary twig blight. In many districts apple trees presented a scorched and browned appearance as if suffering from blight and severe drouth. Most varieties lost a large proportion of their leaves, which of course resulted in a corresponding loss of the fruit. This visitation, however, had the effect of emphasizing the value of spraying as a factor having an important bearing on increasing the yield in seasons of severe fungous visitation, as well as improving the quality of the fruit. I mention this now to elucidate the apparent discrepancy in the yields of treated and untreated trees. To sum up briefly, untreated trees lost their foliage and consequently their crop of fruit. Spraying prevented the growth of the fungus on the foliage which was thereby retained and with it a large proportion of the fruit. These are points worth remembering. Peaches, cherries and plums were treated with the two-fold object of preventing loss from a fungous disease causing the fruit to rot on the tree, and insect attacks; apples and pears to prevent injury from *Fusicladium* and insect pests. The results, owing to the difficulties outlined above, were not conclusive in every instance. This was reasonable in consideration that in one or two cases no spraying was done between May 4th and June 5th, owing to the continuous rainfall. Another cause affecting the completeness of the report was the failure of some of the experimenters in the hurry of marketing operations to record carefully the yields of the sprayed and unsprayed trees. Writing of this phase of the question one of the committee very sensibly remarks that "there seems to be a little difficulty in getting reliable statistics as to numbers, weights, etc. When the exact moment arrives for counting specimens and weighing fruit the experimenter will probably be so rushed with other work that the details of the experiment may be neglected and the value of the whole test seriously impaired."

However, I am pleased to state, and I think you will agree with me, that the records which have been secured are sufficiently convincing of themselves to be entirely satisfactory, although it is to be regretted that full returns could not be obtained in every case.

Peaches.

Experiments mainly designed to prevent rot and leaf-curl were carried on in the orchards of Messrs. J. H. Broderick and Eli Gregory & Son, of St. Catharines, Ont., with the help of the gentlemen and the kind co-operation of Mr. Burrell.

The trees should have been sprayed according to the programme outlined in the accompanying calendar, but owing to the earliness of the season the trees were too far advanced to risk the application of copper sulphate. Treatment accordingly began on May 1st with Bordeaux mixture: 4 pounds of copper sulphate, 4 pounds of lime to 50 gallons of water. The second application was made on May 15th. Three ounces of Paris green was added to each barrel of mixture. The trees were treated again on June 4th, July 11th and July 5th. On account of some indications of injury to the foliage the formula was weakened for the last two applications to three pounds each of copper sulphate and lime and the same quantity of water. Up to July 5th rain was more or less constant. On July 31st Mr. Burrell reported that there seemed to be no difference between sprayed and unsprayed trees in the number of peaches affected by curculio. In regard to rot: "Early Rivers" showed 2 to 4 per cent. rotten on sprayed trees and 5 to 7 per cent. on unsprayed trees. At this time the fruit was beginning to color. The spot fungus (*Cladosporium*) was considerably worse on unsprayed trees. On August 7th "Early Rivers" showed about 6 per cent. of rotten fruit on sprayed trees and 8 per cent. on unsprayed trees. "Early Richmond" gave approximately the same results. As the crop was excessively heavy the amount of affected fruit even on unsprayed trees could not be regarded as harmful, owing to the beneficial effects accruing from this thinning process. In fact the quality of the crop would have been much improved by removing at least 30 per cent. of the fruit which set, a large proportion of which was allowed to mature.

With regard to the leaf-curl, there was none on the treated trees and scarcely a sign of it throughout the orchard. Mr. Burrell noted at harvesting time that in all cases the fruit on the sprayed trees was higher colored than that on the untreated trees. This was undoubtedly due to the absence of the spot fungus already referred to as *Cladosporium*.

Notes taken on September 1st indicate that as far as it was possible to judge by appearances, the sprayed trees carried more and better fruit, and had much better foliage than those untreated. On the matter of pears we have, however, interesting evidence from Mr. M. Pettit, of Winona. Although experiencing much inconvenience from continuous rainfall, he reported on May 26th, that on looking over the sprayed and unsprayed he could see quite a difference in favor of the sprayed trees. "The Beurri Gifford and Flemish Beauty, unsprayed, showed considerable fungus, both on leaf and fruit, while on the sprayed trees there is scarcely any to be found. I also think there is more fruit on the sprayed trees." Writing again under date of November 7th, Mr. Pettit says: "Regarding the yield of pears I am unable to give you exact figures, but I think the sprayed trees of Flemish Beauty had fully 75 per cent. more fruit than those not sprayed. Beurri Gifford, sprayed twice before blooming and regularly afterwards, were loaded with perfectly clean fruit, while trees of the same variety not sprayed until the fungus appeared, which was very soon after the pears had formed, on May 29th and June 9th, were almost entirely destroyed. There was not much difference in the Bartletts sprayed and unsprayed, as they were all a good clean sample this year."

The trees were sprayed with copper sulphate on April 16th, Bordeaux mixture on May 4th, 15th and 29th, and June 13th and 29th. Paris green was added in the later sprayings. The best proof of Mr. Pettit's belief in the work is his statement that he fully intends to spray thoroughly next year. He also concludes, as a result of the season's experiments on pears, that two sprayings before the blooming period are of more value and have more effect than four sprayings after that period.

In the orchard of Mr. E. J. Woolverton, a striking example of the effect of Bordeaux mixture upon Flemish Beauty pears was provided. Of two young trees of this variety standing alongside each other in the same row one was sprayed, the other not treated. On August 29th the sprayed tree was clothed with luxuriant foliage and carried an average crop of clean fruit, while its neighbor, the unsprayed, had lost fully 25 per cent. of its leaves and was almost bare of fruit. The result at harvest time was a bushel of good pears on the one hand and a few inferior specimens on the other.

Let us conclude then that the cracking and spotting of the pear may be prevented with great benefit to the tree by the timely application of Bordeaux mixture, and that in treating these diseases the early treatments are most important.

Apples.

It is gratifying to be able to record results which cannot be accepted otherwise than as absolutely conclusive in connection with perhaps the most important class of fruit which entered into this experiment, viz., apples. The usual difficulties and hindrances encountered make the results all the more emphatic and valuable. I wish also to state that the work should have been commenced at least ten days earlier than when it was begun, and that the first spraying should have been made with copper sulphate. This is in line with the experience of Mr. Murray Pettit.

An interesting experiment was planned and inaugurated in the extensive apple orchard of Mr. C. P. Carpenter, but was not carried out owing to the condition of the ground, it being so soft as to preclude the possibility of getting horses into the orchard. Thirty-two days elapsed between the first and second sprayings, but the benefit of the first application could easily be seen in August on the foliage of Greening, Colvert, Spy and Early Harvest. Mr. Carpenter also noticed an improvement in the quality of Northern Spy.

The results of the experiments made by Messrs. M. Pettit, E. J. Woolverton and A. H. Pettit are given in the accompanying tabulated statement.

In submitting his results Mr. M. Pettit says that the Snow apples were not quite free of fungus, but much better than last season. Spys were much improved, while the tests on Baldwins was a great success.

Mr. E. J. Woolverton, writing under date of October 25th, says: "I have no doubt that had the experimental plots received an application of copper sulphate earlier in the season the results would have been still more satisfactory; but even now, after all the fruit is picked, it is an easy matter to pick out the treated trees from the untreated, owing to the much richer and more healthy character of their foliage."

Mr. A. H. Pettit, at one time indifferent in regard the value of spraying, and to whom I specially owe my best thanks, not only for inciting the movement, but for most faithfully and conscientiously carrying out under extreme difficulty the entire plan of the experiment as originally laid down, writes as follows:

"I now enclose you a statement of the result of the spraying experiment with *Bordeaux* conducted in my orchard under your direction during the past season; and in doing so I must express my great satisfaction in the results obtained; it has shown the effects in such a marked degree.

"The experiment you conducted here this season has demonstrated to me, and many other fruit growers, that spraying with Bordeaux, properly applied and at regular intervals, will be of great practical value in destroying the fungus that is, I believe, causing the unfruitfulness of our orchards. The sprayed trees, aside from the large increase of crop, presented a fine healthy foliage, while those by the side of them, *unsprayed*, showed a very unhealthy appearance and no fruit. I might add, that while the fruit on the sprayed trees was of good size and color it was not entirely free from damage by the codling moth, and on two or three varieties, the American Golden Russet, Fameuse and Swaar were affected by a scab to quite an extent. Now, this may have taken root during our excessive wet weather a few days after the first spraying. I am also inclined to think, although I have no means of knowing it to be so, that the Bordeaux mixture does to some extent destroy the action of the Paris green. Had it not been for the work of the codling moth the percentage of first quality would have been greater.'

"Now, I may go a little beyond the experiment proper, having sprayed a number of trees to a greater or less extent. The season, as you are aware, was most unfavorable in some respects, not only for spraying regularly, but for the cultivation of the orchard and vineyard. The extreme wet being followed by the rapid drying up of the land. I was pressed for time to get what spraying I did get done (beyond the experiment proper) with any regularity. Some were done moderately well, while other parts were not done so well, but I can distinctly trace the good effects of the application in the increased production, and also in the improved condition of the foliage, even to the extent of one side—quite a number of the trees producing good results and good foliage on one side, while the other side of the tree was barren of fruit and of unhealthy foliage.

"I believe, sir, that the value of this experiment, so practically demonstrated, will give a wonderful inspiration to our fruit growers to fight straight along this line, and I trust your report will be convincing and as widely distributed as possible, in order that every fruit grower may reap the reward of your and your associates' researches and experiments to destroy the insects and diseases that are affecting our fruit trees and fruits, and

I trust if there are any other doubting fruit-growers as to the benefit of spraying you will convert them at once, even should it be the means of flooding the universe with clean, choice, Canadian fruit."

The crop of peaches in Mr. Gregory's orchard was also uniformly large, and of good quality throughout. So little apparent difference could be noticed that picking records were not preserved. My own notes taken on June 26th and August 29th, indicate that there was less rot on the sprayed trees among the early varieties such as Rivers, Mountain, Rose and Crawford.

To sum up: Experiments on peaches were not attended by marked results owing to the absence in a large measure of fungous diseases, and the presence of an unusually heavy crop of fruit. From the experience of the past season, it appears desirable to apply even a weaker formula of Bordeaux than that recommended, and it is suggested that after the foliage has appeared three pounds each of copper sulphate and lime to fifty gallons of water be used. This formula might be used in treating all stone fruits, although cherries were not injured by the ordinary formula.

Plums.

I am glad to be able to report more definite results regarding the treatment of plums. In Mr. Broderick's orchard a block of plums composed of Munro, Bradshaw and Lombard was selected, and a part of each sprayed on the dates already given. The trees were young, just coming into bearing. Rot was more or less prevalent on all varieties, but the greatest damage to the trees was wrought by the shot-hole fungus (*septoria cerasina*), and in preventing this disease the best results were obtained. Fruit growers well know the effect on the fruit of the loss of the foliage previous to the harvesting period—decreased size and poor coloring are sure to follow.

Notes taken on June 26th and August 29th, emphasize the fact that the foliage of the sprayed trees was vastly superior to the unsprayed. In walking through the orchard the difference in the health and luxuriance of the two series at once made itself apparent.

To obtain accurate data regarding the character of the fruit, two trees were selected as much alike as possible in every respect, one sprayed, the other unsprayed. The fruit of each was gathered and weighed. The sprayed trees yielded fourteen and a quarter pounds of sound plums, the unsprayed twelve pounds. But the difference was most noticeable in the superior size and quality of the fruit from the sprayed tree. One hundred plums from this tree weighed three pounds and nine ounces, while one hundred plums unsprayed, weighed two pounds and one ounce.

The sprayed plums would easily sell as good first, while the unsprayed, owing to small size and lack of color, could hardly be classed as seconds.

Touching the treatment of plums, Mr. Wm. Orr, of Stony Creek, Ont., writes as follows: "Other years we have lost heavily from rot, especially on Duane's Purple and Pond's Seedling, frequently losing the greater part of the crop of these varieties. This year the trees were heavily loaded with fine clean fruit which was marketed without any serious loss from rot. The check trees of Pond's Seedling dropped their fruit early in the season, and the checks of Duane's Purple rotted considerably, although not so badly as they did some other years."

In this connection Mr. Orr states that he found spraying with Paris green effectual in destroying the curculio.

Mr. Burrell, of St. Catharines, also writes that he had two rows of bearing plum trees, the end tree of each row being left unsprayed. "On October 22nd, when these two untreated trees were practically bare the rest were looking green and thick with leaves." I may say in this connection that the Experimental Farm plum orchard, made up of some seventy-five varieties, including many varieties of Prunus Americana, has been kept entirely free from rot by the persistent application of Bordeaux mixture each year in conjunction with Paris green to prevent curculio attacks. Native plums in the vicinity of Ottawa have for the past three years been a failure owing to rot (*monilia*) and the spot disease (*cladosporium.*) In my opinion, no plum grower can afford to omit spraying with Bordeaux mixture and Paris green.

Cherries.

Experiments for the prevention of rot were carried out in the orchards of Messrs. Broderick and Gregory, of St. Catharines, Ont., and E. J. Woolverton, of Grimsby, Ont.

Spraying began with Bordeaux mixture on May 1st, when the blossoms were beginning to open. Three additional applications were made with the same mixture with the addition of Paris green. Records of yields were obtainable from Messrs. Broderick and Woolverton. The former gives the yields of two trees of Yellow Spanish as nearly alike in every respect as possible at the beginning of the season.

Sprayed trees yielded ninety pounds of sound fruit.

Unsprayed trees yielded thirty pounds of sound fruit.

Mr. Broderick adds that the lower branches of the treated tree were well loaded with sound fruit, while there were a good many cherries at the top of the tree which was not thoroughly covered in spraying. This emphasizes the necessity of great care in applying the fungicide.

Mr. Woolverton's results were rather startling in their emphatic conclusiveness. He reports as follows: "Gave cherries three applications of Bordeaux mixture with four ounces of Paris green to fifty gallons of water on the following dates, blossoms having fallen May 10th, May 26th, and June 4th, also one application of ammoniacal copper carbonate on July 4th." Note—June 4th.: "Cherries already show good results; the tree left unsprayed is much inferior in fruit and foliage to the one treated."

July 9th: "Picked fruit on unsprayed tree, yield seventeen pounds." July 10th: "Picked part of fruit on sprayed tree, amounting to 112 pounds; the remainder not quite ripe." July 17th.: "Picked remainder of fruit of sprayed tree, eighteen pounds; total yield, 130 pounds."

"Spraying cherry trees with Bordeaux mixture not only prevents rot, but seems to prolong the growing season, as will be seen from the above dates of picking." He further says that the advantage from spraying these trees is apparent from the following figures which are absolutely correct: Cherries from sprayed trees netted $9 25, and were a choice sample. Cherries from unsprayed trees netted $1.20, and were a medium sample.

These are actual results obtained from two large trees, the advantage being on the side of the unsprayed in point of size of tree and bearing capacity at the time spraying began. One of the lessons this teaches is that in the case of cherries early spraying—that is, before the buds start—is not so important as the thorough and frequent application of the fungicide during the growing period of the fruit.

Pears.

The spotting and cracking of early pears, notably the Flemish Beauty, has for the past few years been a source of great loss to fruit growers. Strong evidence on this subject was submitted by Mr. Orr at the last meeting of the Society at Peterboro'. He also reported failure in preventing the disease by spraying with Bordeaux mixture. The orchard referred to was one of those selected for experiment this year, but unfortunately, owing to the following reasons given by Mr. Orr, no definite results were obtained. He says: "Owing to an extremely wet June, it was impossible to carry out the experiments thoroughly, or as we should liked to have done. The severe drouth in mid-summer seriously impaired the quality and size of the fruit. The soil being heavy clay felt the effects of the dry weather most keenly. A heavy wind storm occurred before harvesting time and blew off the more or less prematurely ripened fruit, which at this time was unfit for market. It was therefore impossible to estimate the value of the work done on pears."

RESULTS OF EXPERIMENTS.

The orchards from which the most complete returns have been received are those of E. J. Woolverton and A. H. Pettit, of Grimsby, Ont. Table I. shows the varieties treated and the percentage of yield of fruit of the different grades after being carefully sorted. Mr. Woolverton's table also shows the relative percentage of windfalls in both series. Having these figures the deductions which appear in Tables II. and III.

are drawn therefrom in order to present the results in a clearer and more convincing manner. In these tables are presented the combined and averaged results of all experiments, and the percentage of gain in yield of fruit of the sprayed over the unsprayed trees. This table shows that the sprayed trees yielded 24 per cent. more of first class fruit and 6 per cent. and 18 per cent. less, respectively, of second and third class.

TABLE I. showing variety treated and percentage of yield of fruit of the different grades.

Variety of apple.	How treated.		Firsts.	Seconds.	Thirds.	Per cent. of total yield.
E. J. WOOLVERTON:			Per cent.	Per cent.	Per cent.	
Golden Russet	Sprayed	Handpicked	36.07	34.86	29.05	80.13
		Windfall	....	49.09	50.90	
"	Unsprayed	Handpicked	7.89	52.62	39.48	19.86
		Windfall	....	15.00	85.00	
Baldwin	Sprayed	Handpicked	80.43	19.56	....	100.00
		Windfall	....	70.83	29.16	
"	Unsprayed	Handpicked	....	....	....	....
Greening	Sprayed	Handpicked	55.61	29.75	14.63	93.90
		Windfall	....	34.70	65.30	
"	Unsprayed	Handpicked	....	100.00	....	6.09
Northern Spy	Sprayed	Handpicked	52.25	41.08	6.66	65.90
		Windfall	....	71.42	27.58	
"	Unsprayed	Handpicked	11.83	42.40	45.76	34.09
		Windfall	....	....	100.00	
Cranberry Pippin	Sprayed	Handpicked	17.04	56.12	26.84	67.94
		Windfall	....	36.66	63.34	
"	Unsprayed	Handpicked	2.48	58.70	38.82	32.05
		Windfall	....	36.00	64.00	
Spitzenberg	Sprayed	Handpicked	51.15	41.86	6.99	100.00
		Windfall	....	52.63	47.37	
"	Unsprayed	Handpicked	none.	none.	none.	....
A. H. PETTIT:						
Blenheim Pippin	Sprayed		80.00	20.00	....	51.72
"	Unsprayed		25.00	53.57	21.42	48.28
Baldwin	Sprayed		75.32	14.34	10.33	100.00
"	Unsprayed		....	....	....	....
Greening	Sprayed		69.96	20.72	9.32	97.05
"	Unsprayed		13.33	36.00	50.67	2.95
Red Astrachan	Sprayed		54.29	28.96	16.75	75.71
"	Unsprayed		30.11	29.89	40.00	24.29
American Golden Russet.	Sprayed		40.00	40.00	20.00	73.17
" "	Unsprayed		27.27	54.54	18.18	26.83
Swaar	Sprayed		28.40	56.80	14.79	98.83
"	Unsprayed		....	100.00	....	1.17
Alexander	Sprayed		77.14	17.14	5.71	69.30
"	Unsprayed		58.06	29.03	12.90	30.70
MURRAY PETTIT:						
Baldwin	Sprayed		69.70	30.30	....	....
"	Unsprayed		27.18	72.82	....	....

TABLE II. shows the average percentage of the different grades from all varieties.

—	Firsts.		Seconds.		Thirds.	
	Sprayed.	Unsprayed.	Sprayed.	Unsprayed.	Sprayed.	Unsprayed.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
E. J. Woolverton	31.77	5.40	44.53	49.70	23.69	44.90
A. H. Pettit	59.07	36.98	27.36	35.07	13.57	27.94
Average	45.42	21.19	35.95	42.39	18.63	36.42

TABLE III. shows the ratios of the yield of the three grades of fruit.

—	Firsts.	Seconds.	Thirds.	Total yield.
E. J. Woolverton:	Per cent.	Per cent.	Per cent.	Per cent.
Sprayed	94.40	65.90	60.22	74.14
Unsprayed	5.60	34.10	39.78	25.85
A. H. Pettit:				
Sprayed	86.05	75.54	65.08	79.43
Unsprayed	13.95	24.46	34.95	20.57

The effect of this improvement *in quality alone* upon the gross receipts from an acre of bearing apple trees may be shown as follows: Supposing the yield to be 50 barrels we find, according to results gained, that spraying would give at ordinary market rates, $2.50, $1.75, and 0.75, for first, second, and third class respectively, $56.75 worth of No. I. fruit, $31.50 worth of "seconds," and $6.97 of "thirds," or a total of $95.22. The same area unsprayed would give of No. I. fruit $26.75, of No. II. $37, and of third class $13.64, or a total return of $77.40, leaving a balance in favor of the sprayed acre of $17.82. This is supposing that all the "seconds" and "thirds," which in the case of the unsprayed is very large, could be sold. The cost of spraying an acre of apple trees will vary according to the size of the trees; using diluted Bordeaux mixture and making five applications it need not exceed $6 and may be under $5. There would thus be a net profit of $10 to $12 on the basis of equal yields and improved quality. As a result of the experiments referred to, and looking at spraying as *affecting the yield*, we find that the sprayed trees gave 74 per cent. of the total yield. This return, added to the improved quality, gives a difference in the net receipts of $51.53 in favor of the sprayed acre.

I do not think this side of the argument need be pushed farther, though it would probably prove interesting to know the effect of this on the crop of the province. Each grower will find it to his interest, however, to make a calculation for his own satisfaction on this basis.

EQUIPMENTS FOR SPRAYING.

Where the area to be sprayed exceeds 15 acres it will probably pay to buy a horse power pump. These are now made by several firms dealing in force pumps. One which I have used with satisfaction at Ottawa, during the past season, was purchased from the Field Force Pump Company, of Lockport, N. Y.

Where a barrel is used—and I may say that one of these will answer the requirements of all having 15 acres or less to spray—a strong force pump should be secured. The valves and inside working parts should be of brass, the metal chambers and all castings strong and heavy, and the packing of the most durable character. Nothing is more annoying, and nothing acts more as deterrent to the introduction of the practice of spraying, than the "breakdowns" which occur with irritating frequency at the beginning of the work each year. This matter has been represented so strongly to Canadian firms that I believe satisfactory pumps will be forthcoming next season. I have used with good results pumps manufactured by the Toronto Pump Company, and the Goold, Shapley, Muir Company, of Brantford, Ont., although the first "Ideal" pumps manufactured by the latter firm showed defects under strong pressure; these I believe, have been remedied. Each pump should be supplied with two lines of hose, the lengths proportionate to the height of the trees, each fitted with a stop-cock. In cases of clogging the stop-cock will always be appreciated. The nozzles which gave greatest satisfaction were the "Vermorel" and the "McGowen;" the latter is most economical of fluid and should be used exclusively when the trees are small, or upon the lower branches. The McGowen is a valuable instrument for carrying the liquid to the upper branches with a minimum degree of waste. A bamboo pole through which a brass tube may be inserted, is an improvement over an ordinary pole for the purpose of elevating the nozzle. I wish to impress upon fruit growers the desirability of beginning the season's work with apparatus fully equipped and in good working order, as the ease with which the applications are made influences to a large extent the thoroughness of the work, and upon the thoroughness will depend in a large measure the success attending the undertaking.

PREPARATION OF BORDEAUX MIXTURE.

The ingredients are copper sulphate, lime and water. A good quality of copper sulphate should be secured. As pointed out by Mr. Fairchild, a brand which contains a large amount of iron or zinc sulphate should not be used, although it has not been proved that these ingredients actually injure the mixture. He further states that lime which is made from stone containing a large amount of clay is likely to be what is known as "dead" lime, and to contain small insoluble granules. This kind of lime may be used, but is likely to give trouble unless the resulting milk be well strained before adding it to the copper sulphate. Lime which is air-slaked should not be employed in any case since its use results in injury to the foliage. The method of preparing the mixture has so often been described that I need not again repeat the directions.

Where large orchard areas are under treatment the work of preparing Bordeaux mixture may be greatly lessened by making at the beginning of the season stock solutions of copper sulphate and lime, which may be diluted as needed. Dissolve 100 pounds of copper sulphate in 50 gallons of water; when dissolved 2 gallons will contain 4 pounds of the salt. In another barrel slake 100 pounds of lime and make up to a milk by adding 50 gallons of water. Two gallons when well stirred should contain 4 pounds of lime. When it is desired to make a barrel of Bordeaux mixture, take 2 gallons of stock solution of copper sulphate and add the same quantity of the milk of lime, which should neutralize it completely if the lime is of good quality. If the lime is air slaked or impure the right quantity can be ascertained by applying the ferrocyanide of potassium test. If the lime is deficient a drop of the ferrocyanide of potassium (yellow prussiate of potash) added to the mixture will turn brown; add lime water till the drop of ferrocyanide of potassium remains colorless.

AVERAGED RESULTS

GAINED IN SPRAYING FOUR LEADING VARIETIES.

<table>
<tr><th rowspan="2">Variety.</th><th rowspan="2">How Treated.</th><th colspan="20">PERCENTAGE SCALE.
GRADES OF FRUIT.</th></tr>
<tr><th colspan="2">10</th><th colspan="2">20</th><th colspan="2">30</th><th colspan="2">40</th><th colspan="2">50</th><th colspan="2">60</th><th colspan="2">70</th><th colspan="2">80</th><th colspan="2">90</th><th colspan="2">100</th></tr>
<tr><td>A. G. Russet..</td><td>Sprayed......</td><td colspan="8">First Quality.</td><td colspan="8">Second Quality.</td><td colspan="4">Third Quality.</td></tr>
<tr><td>A. G. Russet..</td><td>Unsprayed ..</td><td colspan="4">1st. Quality.</td><td colspan="10">Second Quality.</td><td colspan="6">Third Quality.</td></tr>
<tr><td>Baldwin .....</td><td>Sprayed......</td><td colspan="16">First Quality.</td><td colspan="2">2nd Qual.</td><td colspan="2">3rd Qual.</td></tr>
<tr><td>Baldwin ......</td><td>Unsprayed ..</td><td colspan="6">First Quality.</td><td colspan="14">Second Quality.</td></tr>
<tr><td>Greening.....</td><td>Sprayed......</td><td colspan="13">Second Quality.</td><td colspan="5">Second Quality.</td><td colspan="2">3rd Qual.</td></tr>
<tr><td>Greening ....</td><td>Unsprayed ..</td><td colspan="2">1st Qual.</td><td colspan="7">Second Quality.</td><td colspan="11">Third Quality.</td></tr>
<tr><td>N. Spy ....</td><td>Sprayed......</td><td colspan="10">First Quality.</td><td colspan="8">Second Quality.</td><td colspan="2">3rd Qual.</td></tr>
<tr><td>N. Spy ......</td><td>Unsprayed ..</td><td colspan="3">1st Quality.</td><td colspan="7">Second Quality.</td><td colspan="10">Third Quality.</td></tr>
<tr><td rowspan="2">Average of above.</td><td>Sprayed ....</td><td colspan="11">First Quality.</td><td colspan="6">Second Quality.</td><td colspan="3">3rd Qual.</td></tr>
<tr><td>Unsprayed ..</td><td colspan="4">1st Quality.</td><td colspan="9">Second Quality.</td><td colspan="7">Third Quality.</td></tr>
</table>

AVERAGE RESULTS FROM ALL VARIETIES.

<table>
<tr><td>Percentage Scale ....</td><td colspan="2">10</td><td colspan="2">20</td><td colspan="2">30</td><td colspan="2">40</td><td colspan="2">50</td><td colspan="2">60</td><td colspan="2">70</td><td colspan="2">80</td><td colspan="2">90</td><td colspan="2">100</td></tr>
<tr><td>Sprayed ....</td><td colspan="9">First Quality.</td><td colspan="8">Second Quality.</td><td colspan="3">3rd Quality.</td></tr>
<tr><td>Unsprayed ....</td><td colspan="5">First Quality.</td><td colspan="8">Second Quality.</td><td colspan="7">Third Quality.</td></tr>
</table>

SPRAYING CALENDAR.

Plant.	1st Application.	2nd Application.	3rd Applicatian.	4th Application.	5th Application.	6th Application.
Apple. Apple spot fungus, codling moth, bud moth.	*Copper Sulphate.* Before buds start.	*Bordeaux.* Just before blossoms open.	*Bordeaux.* *Paris Green.*—Soon after blossoms fall.	*Bordeaux.* *Paris Green.*—10-15 days later.	*Bordeaux.* 10-15 days later if spot disease is severe.	
Cherry. Rot, leaf diseases and injurious insects.	*Bordeaux.* Before flower buds open. *Kerosene Emulsion* for aphis.	*Bordeaux.* *Paris Green.*—When fruit has set.	*Bordeaux.* *Paris Green.*—10-15 days later.	*Ammonicaal Copper Carbonate.* 10-15 days later.		
Grape. Mildew, rot, leaf eating insects.	*Copper Sulphate.* Before buds burst.	*Bordeaux.* *Paris Green.*—When first leaves are half grown.	*Bordeaux.* When fruit has set.	*Bordeaux.* 10-15 days later.	*Bordeaux.* 10-15 days later. If disease persists.	*Ammoniacal Copper Carbonate.* If disease persists.
Peach—Apricot. Rot, leaf curl, curculio.	*Copper Sulphate.* Before buds start.	*Bordeaux.* 3 lbs. copper sulphate. 3 lbs. lime. 50 gals. water. Just before blossoms open.	*Bordeaux.* *Paris Green.*—Soon after fruit has set.	*Bordeaux.* *Paris Green.*—8-12 days later.	*Bordeaux.* *Paris Green.*—8-12 days later if rot is prevalent.	*Copper Carbonate.* 10-15 days later if rot is prevalent.
Pear. Scab, leaf blight, codling moth.	*Copper Sulphate.* Before buds open.	*Bordeaux.* Just before blossoms open.	*Bordeaux.* *Paris Green.*—Soon after blossoms fall.	*Bordeaux.* *Paris Green.*—10-12 days later.	*Bordeaux.* 10-15 days later.	
Plum. Rot, shot hole fungus, curculio.	*Copper Sulphate.* Before buds open.	*Bordeaux* *Paris Green.*—Soon after blossoms have fallen.	*Bordeaux.* *Paris Green.*—10-12 days later.	*Bordeaux.* 10-15 days later.	*Copper Carbonate.* 10-15 days later if rot is prevalent.	*Copper Carbonate.* 10-20 days later if rot is prevalent.

Prof. Craig exhibited photographs of trees before and after spraying.

Mr. McNeill (Windsor): I had some difficulty in spraying. One of the difficulties was the straining. I used all sorts of material and spoiled any number of old suits of clothes preparing that stuff, and I would like you to recommend something to strain it through. Sacking and gunning cloth are no use whatever.

Prof. Craig: I do not think it is necessary to strain in every case. If you mix up the stock solution and then add your 50 gallons of water to the lime, you can get sufficient milk of lime from the top to neutralize the copper sulphate without any danger of clogging the nozzle.

Mr. McNeill. In testing with the ferrocyanide you will find it very difficult to determine when there is a brown discoloration and when there is not. I suggest that you use a chemist's test tube, or a small bottle, and drop it in as you would in a chemical experiment and watch it between you and the light. I had unskilled labor with me, and I know the difficulties that arise on these little points.

D. W. Beadle: Can't we get along without this little puttering business with the ferrocyanide? Farmers don't like to be bothered with little details like that. Can't we put enough lime in to make sure that we have done the work without any of this bother with the ferrocyanide?

Prof. Craig: I suppose in nine cases out of ten you can, but I think it is less bother with the ferrocyanide than without it.

D. W. Beadle: Perhaps it is to you, but I know how the farmers grumble about doing all these little puttering things.

Prof. Craig: The whole operation of spraying is a puttering thing; I admit that. (Laughter.)

D. W. Beadle: I think it would be possible to give them enough lime in a formula to make sure that you have destroyed all the injurious effect to the foliage from the bluestone.

Prof. Craig: If they use four pounds of copper sulphate and four of lime, there is plenty of lime and more than sufficient; but the idea of using this test is to use just enough so that there will be no danger of clogging the nozzle by having an excess of lime.

Mr. Morris (Fonthill): Don't you consider the impoverished state of the soil in which we generally find orchards, and the neglected condition of the trees helps to bring on and spread this fungus? I have noticed this past season particularly a light soil where the fungus ran over an orchard and scarcely left any fruit and the leaves fell off at the same time. On one orchard in strong heavy soil, about two miles from where I lived, where it was loaded with fruit, most of the leading varieties, the leaves were healthy and the fruit was clean and good, and the trees were just fairly bending down; and yet within two miles—in fact almost on the next farm—where the farms had been neglected, the leaves would be off.

Prof. Craig: There is no doubt that, upon general principles, the statement Mr. Morris has made will hold good, that, as pointed out by Prof. Panton last night, any plant or any animal if it is in a debilitated condition may be more readily attacked by disease than one that is healthy. At the same time we have many conflicting results. One of the orchards in which these experiments were carried on was a model orchard—you would not be able to find a handful of weed in the whole thing, it was well cultivated and well manured, and still the trees were badly affected by scab every year. They are making satisfactory growth and doing well every way except that they are subject to this disease. I do not think we can expect to correct all the evils by good cultivation, though of course as an aid it is very important.

Mr. Morton (Wingham): The difficulty I find in making a solution is to dissolve the copper sulphate. You have got to start a considerable time ahead else you will lose a lot of time.

A DELEGATE : Take hot water.

Mr. MORTON : I used hot water. I was four hours dissolving twenty pounds, and I did enough grinding to grind up four or five bushels of wheat. The way I found to success was to take it in plenty of time, and all I had to do was to enclose it in a piece of cheese-cloth and suspend it in the top of the barrel, and allow it to remain there. It dissolved there in time and I had no bother. With regard to the lime I have settled down to a formula of four pounds of copper sulphate and six of lime. I mix with the lime and pass as much as will go through ordinary cheese-cloth. It leaves considerable lime behind. Lime is not very expensive, and I don't think any evil results from the excess of lime. When you consider that the excess of lime is simply fused through the large quantity of water there is no injury will result from that. I throw away the residue of lime, and fill up with equal quantities of water and mix them as I use them. I generally spray thirty gallons of water to four pounds of copper sulphate and six of lime ; but when I find others have no evil results with fifty gallons of water I find it is a waste of energy and money. I have dabbled in chemistry somewhat, and have tried the ferrocyanide test, and I consider it too much bother.

Mr. W. S. TURNER (Cornwall) : Is the fungi of the apple entirely dormant during the winter?

Prof. CRAIG : It requires a certain amount of heat, and the requisite amount of moisture ; but I do not think there is any action at all on trees outside, though you have all noticed that the scab itself will grow in the temperature of your cellars on your apples. You can take a barrel of Fameuse in the autumn that have very small spots, and when you open them up at Christmas you find that fungus has grown and gathered a very much larger area than at first. That is a matter of temperature.

Mr. TURNER: There would be no object in spraying now with a strong solution of sulphate of copper?

Prof. CRAIG : No harm would accrue from it, and probably some good, but we have data to show that it would pay for the cost of the work.

Mr. CASTON (Craighurst) : Have you verified that statement about the fungi spreading on the apples in the barrels?

Prof. CRAIG : Yes ; I don't mean spreading from one apple to another, but it is a very common laboratory experiment.

A DELEGATE : Was there any more than the one spraying on those two trees of Northern Spys, shown in the photographs?

Prof. CRAIG : Yes, those were sprayed five times.

DELEGATE : I had an observation of two trees that seemed to be equally blossomed until the fruit was set, and I took two and a half bushels off one tree and one-half off the other. There was no spraying.

Prof. CRAIG : One of them may have been attacked worse by the scab than the other.

DELEGATE : There was very little scab on any of them.

Prof. CRAIG : The fact of the leaves dropping showed the fungus was there. That is why they dropped.

DELEGATE : There was none on the apples that came to maturity.

Mr. LEHMANN : Is it allowable to use lime for Bordeaux mixture that has been slacked for some time.

Prof. CRAIG : Air-slacked lime should not be used.

Mr. LEHMANN : If it is slacked with water and run into a bed?

Prof. CRAIG : I don't know how long it would keep in that condition. As long as it is covered with water and the air is kept away there would be no change take place. That is one of the points connected with making the stock solution. You can keep your lime in the bottom of the barrel all summer covered with water, and use it as you require.

Mr. CASTON : It is supposed to be stronger.

Prof. CRAIG: The grey clay lime is more satisfactory. It does not slack so well; it does not make such a good base as the white lime; it goes into granules.

Dr. BEADLE: The Bordeaux mixture will deteriorate if kept any length of time, and it is desirable to use it as fresh as possible. After a few days it loses a good deal of its value.

Prof. CRAIG: Yes, that is the very reason the stock solutions are made. If they are mixed together chemical action takes place which will destroy the fungicidal effects, and so they must be kept separate.

Mr. SPILLET (Nantye): I have found no difficulty in dissolving bluestone if the water is kept perfectly hot. Get a cauldron or sugar kettle and empty the quantity in that, and put enough fire under it to keep it perfectly hot, and in a few moments it will perfectly dissolve. As to lime, in a country with field stone there is a great deal of sand, and to overcome this condition I mix a quantity of it in a barrel, and stir it up and allow it to settle for a moment and then pour the milk off; throw in some more water and in that way I am of opinion from experiment that you can paint or whitewash foliage with lime, and it would not at all be injurious to a plant. I have actually whitewashed foliage with milk of lime to see whether it would have any deleterious effect, and there was no bad effect visible.

Mr. CRANSTON: Would Bordeaux mixture spread on trees hurt calves or hogs running in orchards afterwards?

Prof. CRAIG: I do not think there is a possibility of poisoning stock from the effects of the spray falling on the fruit. The copper is not an active poison. It has a certain effect on the intestines—a sort of astringent effect—but is not an active poison such as Paris green or any arsenical compound. The actual experiment has been tried of spraying trees heavily with Paris green, and feeding hay which was grown under the tree to a certain animal without any injurious results whatever. I do not think on the average there is any danger need to be feared from that cause.

Mr. MORTON: I think it would not be proper to attempt to dissolve copper sulphate in an iron vessel. It would decompose a portion of the copper sulphate, and also mix up sulphate of iron with it and get an impure mixture.

The SECRETARY: I have done it and used up a good many iron kettles. It goes through them very quickly, but it certainly is a very quick way to dissolve it if you boil copper sulphate in a cauldron.

Mr. SPILLET: You can get large kettles lined with cement.

The SECRETARY: I think the quickest way is to have a stock solution of the lime—a barrel of lime water—then you can dip out into the sulphate solution until you get the ferrocyanide test, and very soon know whether you have dipped in enough. I think it is the quickest way to use the ferrocyanide, because you don't have to measure lime.

Prof. CRAIG: There is just one point more. Mr. A. H. Pettit expressed doubt as to the efficacy of Paris green when applied with the Bordeaux mixture. He thought its poisonous effects would be weakened. I carried on some experiments this year to test that. A row of crab-trees, fruiting heavily, were selected. One tree was sprayed heavily with Bordeaux mixture and Paris green in it; the other was sprayed with Bordeaux mixture alone. The fruit was picked and the number of wormy apples counted at the close of the season, and out of twenty trees tried and experimented upon, the averages made up between the lot showed that there was only two-tenths of one per cent. difference in the results from one series to the other. So that we can say there was actually no difference, and the Paris green is just as effective when applied with Bordeaux mixture as when used alone.

Mr. FISHER: Have you found that Paris green assisted the Bordeaux mixture?

Prof. CRAIG: I gave it a trial for two years, but I have had no good results from using Paris green as a fungicide. and I cannot say that it assists the Bordeaux mixture. It may be an aid.

The PRESIDENT: I think this subject has been pretty well discussed—thoroughly exhausted I might say—and as the time is passing rapidly we had better take up other addresses.

ROADS AND ROAD-MAKING.

The President introduced Mr. **Andrew Pattullo**, President of the "Ontario Good Roads Association"

Mr. **Andrew Pattullo**, after expressing pleasure at being able to attend this meeting of fruit growers, whose proceedings he had watched with great interest, said:—I know how deeply and closely related to the prosperity of the country the work of this association is. If it is true that he is a benefactor who will make two blades of grass grow where one fomerly grew, the fruit growers of this country must be benefactors indeed, because you are successfully endeavoring to increase to an enormous extent the productive resources of this country. Outside of your association, the people of Ontario especially, and the people of all Canada are beginning to realize what you have realized for some time past, what great possibilities there are in this country for fruit growing, and how much the annual productive wealth of the country can be increased by intelligent and united effort in the direction of improvement. Some may be disposed to ask what relation good roads have to fruit growing? Well, it does not become me to dwell upon that. I think your president answered that question himself when he asked me to come here and say a few words upon a subject to which I have given some attention of recent years; but I think it is obvious to you all that good roads have a very direct reference and relation to fruit growing as well as to every other agricultural production of this country. You know that to fruit growers it is important not only to have good markets, but good facilities for reaching those markets. For instance, over a good road ten miles is not very far to any market; over a poor road five miles might be a very great distance. Consequently, I think it is self-evident that the better the roads of this country, the better it will be for the fruit growers as well as those who produce grain and cheese and all other agricultural products. And especially at certain times of the year with perishable fruit, you know the importance of being able to reach markets that are at some distance from you; so that I am not surprised that the fruit growers as well as those engaged in other branches of agriculture are beginning to feel an interest in this great question of the importance of the rural highways of the country. It has been said that men are very much like animals or insects. We get accustomed to our surroundings, and we begin after a while to realize or to imagine that our surroundings are always right. There is a hackneyed phrase which has been very much abused—a poetic expression which says that "Whatever is, is right." Well you know to what extent that phrase is misapplied, but I use it to illustrate the feelings of many people in this country that the roads which we have had and which we have grown accustomed to are the only roads which we might have had. Well, many of you here have had opportunities of using the roads of other countries, and you know what a contrast there is between them and the roads to which we are accustomed in this fair Canada of ours. In England and Scotland, many of you know from personal observation, the roads are wonderfully good, and are kept up at not a very great deal of expense. In France, where the people are immeasurably poorer than the people of this country, the peasantry are willing to be taxed to the extent of something like twenty millions of dollars every year to keep up their rural highways; and it is rather surprising that in a community such as we have in Ontario, where people in the aggregate and individually will compare in wealth and intelligence with those old countries, we have not as good roads as they have over there. We have made so great progress in many directions, we have spent so much upon our railways and upon our homes and in a vast number of other directions, that it seems to me we have entirely forgotten the relation to public highways to the general prosperity of the country. It is sometimes said that the climate of this country is against having good roads—that it is not possible for us to have as good roads as they have in Europe. Well, perhaps it is not; there is something in that contention; but my own observation in Scotland, where I spent a summer some years ago, and in England in this; that taking all in all, so far as roads are related to the climate, I think we can have just about as good roads here as they have over there. Of course we have to contend against the frost here, but they have to contend against almost constant wet weather.

Many of you have heard the old saw about the little Scotch boy who was asked if it always rained there, and he said, "Naw, it sometimes snaws;" and the fact is that in that country it is usually very wet; and the attrition on the roads resulting from the climate there is fully equal to the injury that is done in this country from frost and the effect of our climate. During part of the year in this country we have the roads sealed up by the snow and the frost, and during that portion of the year our roads are not suffering to the extent that the roads in England and Scotland do through the wet weather or the winter season there. Now, gentlemen, I need not dwell upon what is our system of road-making in this country. You all understand that it is what we call the statute labor system. Now, I am not going to attack the statute labor system here in order to ask you to change it; that is not my object nor the object of the association with which I am connected—certainly it is not the direct object of the association. What we want in this country is an improvement in the roads. We want an improvement in the streets of the town—in the methods of keeping the streets in the various towns and villages and cities of the country; we want an improvement in the rural highways, and we ask all people to consider intelligently among themselves what is the best system under which this improvement can take place. If you can make this improvement under the statute labor system well and good. If we can devise a better system then I think it would be in the interests of the country, and an evidence of wisdom on the part of the population to adopt that sysem. I think most of you will agree that there are some obvious defects in the statute labor system, which might be remedied even if it were not entirely changed. My own opinion is that it was suited to conditions in the early part of the history of this country much better than it is suited to the conditions now. Then it was necessary for our fathers to do the road-making and road-repairing by the statute labor system, because they didn't have money at that time as they have now. Of course some farmers say they have not got very much more money now than they used to have—some of them say they have not as much—(Laughter). I will not discuss that, but many of you know that there was much less money current in the early days of the country among the people than there is at the present time; consequently the system grew out of the conditions of the people at that time—that people should make the roads themselves in a way that I think is no longer necessary, especially in the older and more settled parts of the country. Now, the first objecton to the statute labor system is that all the work of road-making is done practically in about one week of the year. Now, what does that mean? To use an illustration, which I have used before, it simply means this:—If something goes wrong with your house, if a door is broken in, you repair it at once; if something goes wrong with your wagon, you don't think for a moment of waiting three or four months in order to have it repaired; and so it is in reference to everything that you use, if an accident happens or repairs are needed, you see that those repairs are made at once; but you know that the roads become bad in the spring of the year—that is when the defects in the road develop. Now, what do you do? You don't go and repair them at the time or in the early months of summer when grading is most easily done, and when it is most desirable for a variety of reasons that those repairs should be made promptly; you wait until about the end of June or the first of July, after you have used those roads in their injured condition, and you repair them then—at least you do what is called repairing the roads. Some repairing is really worse than no repairing at all. (Hear, hear, and applause.) Then having done that, what do you do? You leave them for the rest of the year, and that is the end of it. Now, if the statute labor system is sound, you ought to add one rule in carrying it out, and that is that the work of repairing and improving shall go on during the most of the year; that is, that the repairs shall be made when they are needed, and when other repairs are needed that they shall be made, and the work of maintenance and improvement shall go on continually during the year. In the old country they never dream of allowing ruts or holes to remain in the road for half a year. They have a class of men there who are kept along the roadways, and you don't see a hole there that you can put your hand in until it is repaired with broken stones, and the result is that the great leading roads through England, and Scotland and France are as smooth as a billiard table during every season of the year. Now, that is an ideal system of road making. There is another defect in the statute labor system, and it is this, that proper materials are not used. I don't need to describe to you the system of gravelling that has prevailed in this country. I can speak on this point as a practical man. As a boy brought up on a farm, I was able to do a legal day's road work when I was twelve or fourteen years old by driving a team; and I remember that the size of our loads of gravel at that time were just about in inverse proportion to the yarns which the boys used to tell in the gravel pit. (Laughter.) We were not so much concerned about getting good gravel or such large loads of gravel, as we were in putting in the time and enjoying life while the season of road-making lasted. Of course you no doubt have improved upon those times lately. (Hear, hear, and laughter.) I will say this for the path masters, that while a great many path-masters do their work very badly indeed, because they have never given any study to the question of road-making, and while I find very serious faults not only with the system but with the result, I must give credit to a great many path-masters of the country for showing a great deal of intelligence and public spirit in the way in which they make their roads; I am glad to say that some of them more than do their duty under the system under which they do their work. (Hear, hear.) I have known many of them spend time, which really they were not entitled to spend legally, in improving the work on their road; and I am glad to say that each year is showing an improvement in the work of the path-masters and in their intelligence as a class. This leads me to say that sometimes I think the right sort of men are not chosen for road-makers by the municipal council. I don't suppose it would occur up here; but I have found that down with us in the county of Oxford, sometimes the selection of path-master was made by the members of the municipal council with a little more eye to muncipal politics than to their special knowedge of the science or art of road-making. (Applause and laughter.) Of course I say that would not occur in this district,—(laughter and a voice: " Oh, no, or any other,—but it is a defect of the system which I have seen exemplified in some parts of the country. Now, my idea is, that a man who is selected to oversee the making of roads under the statute labor system or any other system, ought to know how to make roads. You don't hire a man to build a house unless he is a carpenter. You don't engage a man to make the plans of a house unless he is an architect. You don't engage a man to make cheese unless he is a trained cheese maker. But you very often select men to make roads who know absolutely nothing whatever about the principles upon which the roads should be made; and I have seen it over and over in various parts of the country, that an intelligent path-master who had done his duty and more than his duty, who had made a good bit of road over which he had had supervision, that he would be changed through municipal influences and succeeded by somebody who knows nothing whatever about good work. And what will this man who succeeds the intelligent overseer do? He will simply go to work and do some summer-fallowing or something pretty much like it on a good bit of road. (Laughter.) We want to change all this; we want to have certain principles laid down under which the roads of the country shall be made, whether they are made under the statute labor system or any other system. One of the first requisites of good road-making under any system is drainage, which is almost entirely neglected in making our roads. In the first place the grades are not properly made, the ditches are not deep enough, and there is no provision made for drainage under the roads in places where it is particularly wet. In many parts of the country where the land is rolling, perhaps drainage is not particularly necessary; it is not so necessary as it is elsewhere. But in many parts of the country drainage is the very first essential. So much is it necessary that it does not make a particle of difference what metal you put upon the roads—whether you macadamize them or gravel them—it would not make any difference; if the bottom is not right, you know that the gravel and metal will sink in the spring and disappear, and the road will become bad no matter what you do; but if you make provision for drainage in such cases the difficulties are overcome. Then there is another defect, and that is in reference to the use of gravel. I don't know how you do it here but down with us whether the gravelling is done by the farmers themselves as part of their statute labor, or whether it is let by contract, the gravel is put on unscreened and it is dumped on to the road, very often it is not even spread. (A voice: "That is the way it is here.") Just think of it! Do you call that road-making? It is dumped down here, and it is not even spread. Now, who are the road makers under such a system as that? Why, the poor unfortunate horses who pass over the roads under such a system as that, the owners of the horses, the feet of which are ruined by tramping over these roads, and the owners of the vehicles which are standing in scores and hundreds in the back-yards and blacksmith shops all over the country. You are the ones who pay for that system of gravelling, the description of which you know to be perfectly true. Now, every intelligent man knows that when you want to gravel a road properly you should use gravel which has not too much dirt in it to begin with; in the second place you should use gravel which has no large stones in it. (Hear, hear.) No stone should be put upon a road in the form of gravel that would not go through a two inch ring. (Hear, hear.) That is a principle which road-makers have laid down; and the folly of putting gravel on in the ordinary way and calling it road-making is shown more clearly when you consider for a single moment the value of those stones which you expect the poor horses and the vehicles to beat into the ground in time. Why, I have seen men actually paid in the county of Oxford for gravelling roads, and they would not hesitate to put on load after load of material most of which consisted of round stones as big as goose eggs or larger. I have seen it actually there as if the stones looked like so many loads of turnips. Think of that being called gravel? The men who do that sort of thing should not be paid by the public for road making; they simply should be arrested and fined for road obstruction—(Hear, hear, and applause)—for obstructing the highways of the country. Now, gentlemen, how are you to put that on? Simply use the material in another way. After a while you will use it in another way; you will use it in broken form; you will have all those stones broken by stone-crushing machinery, and you will get good roads very easily. And that just leads me to say here that sometimes the farmers are rather afraid of this question of road-making, because they say it is going to lead to enormous cost. Now, coming to the question of expense with farmers, and to the imposition of taxes upon farmers, I may say that it is a rather delicate subject. It reminds me of the story that is told of the darkey preacher who proposed to speak on the text, "Thou shalt not steal," who was told, "Brudder, don't you do it; if you preach upon that air text here, you will throw a coldness over this whole meeting." (Laughter.) But if time allowed I could show that the improvement of our highways in this country will not only not impose any additional burdens upon the people of the country, but it will relieve them of a great many burdens that they now bear. It is not a question of taxing you more for good roads; it is a question of relieving you of the tremendous indirect taxes which you are now paying in loss for a system of bad roads. That is the object of road reformers and of the association which I have the pleasure to represent here. Now, just take this question of broken metal. In Oxford county we have around the gravel pits and on the farms in most parts of the country, almost sufficient stone to macadamize the roads of the whole district, but we cannot utilize it. Now, what would be the result if we undertook to utilize it? First of all if we had proper machines by which all the roads would be properly graded, then they would be properly drained we suppose, then supposing we had machines to crush all these stones, and then we had rollers to roll it and put the material on firmly and compactly, what would be the result? Why, sir, it would be an enormous source of revenue to the farmers who have these stones lying waste. It would pay the farmers to draw these stones to the road sides, even if they only get the cost of hauling. It would be so much money in their pocket; and I believe in a few years when we get proper road machinery at work and proper ideas disseminated among the people on this question, you will find the farmers of this province in many parts draw very considerable revenues from selling the useless stones which they have upon the farms for the pupose of improving the roads, and thus increase the value of their property. Now, I am sometimes asked by what system we could carry out the improvement of the roads? Would I urge the people to have macadamized roads in all parts of the country? Well, no, I would not, because macadamized roads are not necessary. I should like to see the leading roads of the country in many parts macadamized. For instance, in many parts of the county of Essex where they have low clay land, it is absolutely necessary to macadamize the roads; but in a district where there is good gravel it is not necessary to go to the expense of macadamizing the roads. I believe that the future system will be something like this, by which we will obtain better roads than we have had in the past. I think you will see the county councils, for instance, carry out the same principle in reference to roads which they do now in reference to bridges. You know that under the municipal system certain bridges belong to the county and some to the township; and I believe if the counties would take the leading roads running through all the municipalities and that those should be under the control and direction and supervision of the county, and that the other roads in the various townships should be under the control of the councils of the various townships, a radical change and a vast improvement would be made in our system of roads—an improvement almost as great as we have seen in the countries of the old world. Now, gentlemen, the loss from bad roads is not all financial, nor is the gain from good ones all financial. I believe good roads have a very important influence on the public outside of the matter of gain or loss. They have a very great social effect. You know that the farmers are really the most isolated class of the community in this and in most other countries, and I know the condition of the farmers in such counties as I have described—in the county of Essex for instance—is almost pitiable through the fact that they are practically tied up on their farms during several months of the year. The letters which members of the association get from there describe the most extraordinary state of things during the wet season, for instance. Now, what is the result? Good roads would not only relieve these men financially, and in reference to the carrying of their products to market, but it will enable them to associate with one another, to move about, and in that way promote social intercourse, and have a more marked effect upon the social and the educational and the religious habits and life of the people; so that from every standpoint roadmaking is of infinite, direct and indirect importance to the whole people of the country. Now, with reference to this particular association let me say one word in reference to the roadsides. It has always been a matter of surprise to me that there was not a love of the beautiful to this extent—that the roadsides of the country should be improved a little as well as the roadbeds of the country. (Hear, hear.) Now, those of you who have come from the old country know that a great deal of the beauty of the landscape is due to the fact that not only are the road beds smooth, but the roadsides are just as smooth as a lawn—they are simply long winding bits of lawn going through the country between pretty hedgerows. Now, in this country if we engage a man to do some ditching along the roadside, we allow him to throw up the dirt and the stones in great heaps and leave them there. It would be just as easy, and it would be vastly more attractive, if he would smooth those down in such a way that the grass would grow over them, and that the road-sides would look neat and beautiful. (Hear, hear.) Some people may say that is not an important matter. I say it is a matter of infinite importance. I ask any of you grey-haired people who have come from Scotland, or England or Ireland, what are the pleasantest recollections you have about the country? Is it not the pretty hedgerows? Is it not the pretty winding roads with their level lawn-like sides that linger in your memory? Who, when looking back on their childhood and the distant home, ever get up their enthusiasm—any glow of home feeling—over the snake fences such as you see in Canada, and the rough and uneven road-sides covered with weeds! (Laughter.) Do you think that that sort of thing ever promoted love of home in any people on earth? And I will tell you seriously that there is no more important aspect to this question than the development of home feeling and love of country in this Canada of ours. (Hear, hear, and applause.) As a young Canadian, while I have had the good luck to see a good of other countries of the world, the effect of it has always been to increase my love of home and of this Canada of ours, (hear, hear); but two things have grieved me: the constant tendency of our boys and girls to go into towns—(hear, hear)—and the tendency of our boys and girls to go to the United States. (Hear, hear.) Now, I maintain that anything that will beautify the rural districts of this country and increase the intercourse of our people, that will make it easier for the young people to go to the school and the older people to go to church, that will enable the young men to drive long distances and take their girls out over these roads—anything that will increase the pleasure and the taste of young people in this country increases a love of home, and develops the spirit of patriotism in this country. (Applause.) I believe that the tide has turned in reference to these matters; that after a while the young people will be more anxious to stay upon the farm, and that we will keep them upon the farm more than we have in the past. So I say it is of infinite importance that we do all that we can, not only to promote the material prosperity of the people by enabling them to sell their products in the nearest market, and at the least loss in transportation, in order to cut down their expenses in moving their goods; that it is of infinite importance to create in their minds love of home and all there is on the farm and in the rural districts. In conclusion, let me say that we have formed an association for the promotion of road improvement in this country, and I would like if this Fruit Growers' Association would show their fraternal interest in us and their interest in this subject as one relating to your own welfare by appointing delegates who will meet with us at the convention in February next. I believe that we, like you, are engaged in a very important work. We don't want to create revolution in the country; we are not ambitious to change systems in a day; our desire is simply this, to make the farmers of the country realize that this is their question, that it is affecting their interests, and that it is one that they can solve, and the solution of which will do them a vast amount of good, and I am glad to say that we have got the Department of Agriculture to recognize our work as it is recognizing your splendid work. They have recognized our work by putting on their list of speakers our question in the farmers' institutes all over the country. The directorate of our association is mostly composed of practical farmers, and among the speakers we have chosen on this question most of them are plain, practical farmers with clear heads and plain speech who realize that this is their question, just as the farmers of the United States know that it is their question; and I believe that what they are doing will have a most important influence in this country in a few years. I am delighted to have been with you, and I hope that the few rambling observations I have made will increase your interest in this question, which I am sure very closely and very fully affects the interests of all of you. (Applause.)

The PRESIDENT: We shall give an opportunity for any questions to be asked, though I do not see that there is room left for further questioning or discussion on this matter. Mr. Pattullo has pretty thoroughly covered the ground.

Mr. BOULTER: I would like to ask if the present system is done away, what line they propose to adopt—whether by direct taxation. putting a force on the road and keeping it in order, or taking the present system of statute labor and employing people by it?

Mr. PATTULLO: The Association was only formed this year in February, and that is a matter that we have not yet entirely thrashed out, and the members of the Association feel that it is much better to discuss this matter in a general way with the people before we commit ourselves to details or plans. This is a democratic country, and the laws which may be passed in reference to road-making are simply those that will come from the people, and I may say from the farmers of the country, who are chiefly interested in the matter. The Association has carefully refrained, and as president I have strongly advised, that at this stage we shall not commit ourselves to details of legislation, which should be the result of a great deal of wisdom and discussion in the future.

Mr. CASTON: I think this question of road-making is one of the most vital importance to us all as fruit growers, because we want the very best roads for the handling of our fruit and the hauling it to our railroad stations. Two or three points in Mr. Pattullo's address should be taken to heart by everyone of us; first, in regard to drainage; second, in regard to ditching. They make usually a square ditch, and it almost invariably caves in. Then in regard to the common stones of our road. If I was a manufacturer of vehicles or a horse-shoer, I would advocate the present system; but not being so let us do away with it. It is a most destructive thing, and people little calculate the amount of damage it is doing to vehicles or horses' feet. If you are on the road and notice fifty or a hundred horses going by, you will be surprised to notice how many of them are lame, owing largely to this cause. I feel like moving a vote of thanks to the gentleman who has come all the way from Woodstock here, and I hope that the committee of resolutions will take a note of it. (Hear, hear.)

The SECRETARY: I think the least we can do as fruit growers to show our interest in this matter—because I am sure we are as interested in the roads as anybody, we have more delicate products to carry over the roads than most people—would be to respond to Mr. Pattullo's suggestion that we send a delegate to the next meeting of the Association (hear, hear) who will not only give our view of the matter, but also bring back a report to us, so that we may be still further in sympathy with this work. I am sure this will be taken up by the directors.

The PRESIDENT: That was my idea when I asked Mr. Pattullo to introduce this subject here. I noticed that this question had been brought into the Fruit Growers' Association in the United States. My opinion is that we have as good a country, or a better one, than they have over there, and I believe we are as good a people or better than they are there (hear, hear, and laughter) and I didn't want to be behind them in anything, and when they were taking this advance step, I thought we could keep up with them. even if we didn't get just a little ahead of them. I am pleased to have our friend, Mr. Pattullo, here, and to see that you have taken such an interest in the subject he has introduced. Do you think that matter of sending delegates should be taken up now?

The SECRETARY: I think it should be left for the directors at their meeting to-morrow.

THE PACKING AND SHIPMENT OF FRUIT.

Mr. C. C. JAMES, Deputy Minister of Agriculture, spoke as follows:

In beginning his address Mr. JAMES referred to the chart used by Mr. Craig, on which the artist had in one case printed "unprayed" instead of "unsprayed." He stated that the man who made the chart appeared to believe that after all "praying for fruit" and "spraying for fruit" were one and the same thing. Certainly the results given by Mr. Craig appeared to prove that in the average season spraying was absolutely necessary if good marketable fruit was to be obtained. Mr. JAMES then quoted at length several printed market reports from London and Liverpool in reference to the sales of American, Nova Scotian and Canadian apples (*i e.* apples from Ontario and Quebec). In one case the apples sold in Liverpool ranged in price from 30 cents to $3.35 per barrel, the difference resulting from variety in quality and method of packing. It costs over $1 to take the apples from the farm to the British dealer. In many cases apples were sold from the farm and shipped abroad that should never have been allowed to leave the farm; in fact they should never have been grown. Sales of American Baldwins were quoted varying from 75 cents to $3.60 per barrel, which showed that the difference in price depended not so much upon the varieties sent as upon the quality of the fruit and its packing. In this connection the speaker submitted to the meeting the consideration of the question: Whether all apples should be packed in classes in standard barrels and marked with the packers' names. The importance of the fruit trade to Ontario was touched upon and the value of spraying as brought out in the previous discussion was emphasized. From many reports the following were taken and advanced as proving that first-class fruit brings good prices in Britain, and that poor fruit does not pay for its transportation.

First is given a table of sales of Canadian apples at Liverpool in the week October 8th to 12th, 1894:

CANADIAN APPLES, LIVERPOOL, OCT. 8-12, 1894.

No.	Price per bbl.	Total.	Remarks.
39	$0 30	$11 70	Very wasty.
1	50	50	Wasty.
24	60	14 40	Slack and wet.
33	75	24 75	Wasty.
20	1 00	20 00	Slack and wet.
29	1 25	36 25	Wet.
9	1 35	12 15	Slack and wet.
39	1 40	54 60	All slightly wet.
21	1 80	37 80	Various kinds slack.
10	2 00	20 00	All tight.
12	2 90	34 80	XXX Hubberts, tight.
28	3 35	93 80	XXX Colverts, tight.
265	$1 36	$360 75	

71 barrels sold for $186 40 ($2.62)
194 " 174 35 (90c.)

The whole shipment averages only $1.36 per barrel.

The next quoted was two weeks later, and the sales were as follows. All these apples were evidently handled at a profit :

CANADIAN APPLES, LIVERPOOL, OCT. 22-26, 1894.

No.	Per bbl.	Total.	Remarks.
15	@ $4 50	=$ 67 50	Tight, King's Fallwater and Blenheim Pippins.
20	" 3 55	= 71 00	Tight, good varieties, XXX.
25	" 3 15	= 78 75	Tight, Baldwins XXX and Cooper's Market XXX.
7	" 3 00	= 21 00	Samples.
61	" 2 85	= 173 85	47 tight, 2 slack, 12 slightly wet (29 Snows).
8	" 2 25	= 18 00	Wet and slack.
136	" $3 16	=$430 10	

To show that great variations are found in the same kind or variety of fruit, the following sales of one variety, Baldwin, were made. This was American fruit. Canadian Baldwins usually sell a little higher than American :

AMERICAN APPLES, LIVERPOOL, OCT. 22-26, 1894.

Baldwins.

No.	Per bbl.		Total.	Remarks.
28	@ $3 60	=	$110 80	Fancy, select.
26	" 3 35	=	87 10	Choice, new barrels.
45	" 3 25	=	146 25	Fancy, select.
30	" 3 05	=	91 50	Tight, new barrels.
77	" 2 75	=	211 75	Slack.
10	" 2 35	=	23 50	Slightly wet.
20	" 2 10	=	42 00	Wet.
10	" 1 15	=	11 50	Slack and wet.
4	" 75	=	3 00	Wasty.
250	" $2 91	=	$727 40	

The SECRETARY: I think we ought hardly to pass this subject without appointing a committee to consider it. I think the points mentioned by Mr. James are very important. I think it is possible to answer the three questions put by the Minister of Agriculture, that the barrels should be of regular size; that they should be graded into one, two and three, and that the name of the shipper should be upon the barrels. It works into the question of the apple inspectorship. I believe it is possible to have this whole thing worked to our satisfaction and to the benefit of the country at large, and I would move that Messrs. A. H. Pettit, George Fisher, of Burlington, and A. M. Smith, of St. Catharines—all of whom have been and are more or less interested in apple shipping—should meet before to-morrow, and see if they can put this matter in some shape to bring it before us for our approval.

Mr. CASTON seconded the motion.

Mr. SMITH suggested the name of Mr. Dempsey in his place, and this was accepted by the secretary, as Mr. Dempsey is one of the largest shippers we have.

Mr. PETTIT suggested that Mr. Boulter's name be added as that of an extensive shipper.

The SECRETARY suggested Mr. Fisher, of Orillia, and Mr. Pettit suggested Mr. Caston, of Craighurst. The committee of six were then appointed, with instructions to report to-morrow.

The meeting adjourned at five o'clock.

SECOND DAY—EVENING MEETING.

The music hall was crowded for the evening meeting.

President RACE took the chair and said: Ladies and Gentlemen, it is highly gratifying to the Ontario Fruit Growers' Association to find that their coming here has awakened such an interest in this community, as manifested in this gathering to-night. We have never seen anything like this before, and being all young men, we feel quite nervous and shy in the presence of an audience of this kind. (Laughter). We have looked upon Hamilton for some years as our best point, but Hamilton never touched this—cannot come near it. (Applause). The reception we are having here makes us feel as though we would like to come back again. (Hear, hear, and applause). We have a pretty full programme to-night; I hope you will be pleased with it. If you are as much pleased with the programme as we are with the audience, I know that this will be a mutually satisfactory meeting.

GEORGE THOMSON, Esq., Mayor of Orillia, then gave an address of welcome. He said: It is a pleasure indeed, for me to welcome you to our town. We are exceedingly pleased to see your with us, and as the crowded audience shows, the people of this town are interested in your work. We are pretty well to the north part of Ontario here, but still the display which is exhibited on the table in the outer room, shows you that we are not too far north to grow, or appreciate good fruit. This, I have no doubt, is a surprise to some of you. You mentioned in your opening remarks, sir, that Hamilton, or some other of those small towns (laughter), didn't extend to you such a cordial welcome. I wish to tell you that in this town we don't do things by halves, this being a go-ahead town, and we try to keep up the reputation. I am sure it is a great pleasure to all the citizens of Orillia, to know that you selected this place for your meeting this year, and I hope that your deliberations will prove useful to the Association. Once more I welcome you on behalf of the town of Orillia. (Applause).

President RACE: In speaking for the Fruit Growers' Association of Ontario, we accept, with the very highest appreciation, the welcome which has been extended to us, not only in the words of your mayor, but in your presence here to-night. He remarked that it was no doubt a surprise to some here to see such a turnout. Now, I can assure you that it was not altogether a surprise to us. We had partly anticipated something of this kind. When you sent a deputation over to Peterborough a year ago to invite us here, we rated up those gentlemen you sent, and made up our minds then that if they were a fair indication of the enthusiasm and the interest of this community in fruit growing, we would meet an enthusiastic and deeply interested people here. Now, we are pleased to know that we didn't rate those men mistakingly. We find them enthusiastic and deeply interested in our work, and we find that they were a fair indication of the people whom they represented when they went to Peterborough, and the promises they made there have been so well filled that we have nothing left to desire. I am sure we have learned since we came here things that have been of profit and pleasure to us. We had no expectation of seeing so many things of interest as you have shown. We didn't expect to see such a fruit exhibit. We didn't come out here to-night in the spirit of conquest or of confiscation, but I can assure you if Moses had been among us, he would have strongly tempted us to come out here and possess this land (applause), because I do not know that Moses even could have been better satisfied with anything than the exhibit of fruit that you have made here to-day, showing the capabilities of this section of the country. We have the grandest country in the world here in Ontario (applause), and I have frequently said we are the best people in the world. (The applause was so loud as to cause a dog in the room to bark). I believe that even a dog can appreciate words of that kind. (Renewed laughter). I can assure you of this, that we are the most deeply religious people in the world, and I find in all sections of the province of Ontario where I have been, that there is not only a religious sentiment prevailing among the people, but that there is love of the beautiful in nature. I have been asked, since coming to the platform, to tell a little experience of mine in one of these northern towns a year or two ago. I was addressing a meeting something similar to this, and I was speaking about beautifying the home surroundings, and I asked why every farm home should not be beautified with all those beautiful things that the Creator has placed within our reach. I was also speaking as to the advantage of having a fruit garden. I said, is it possible that the farmers of this country have neglected a taste of this kind? Is it possible that the farmers have not a taste for a nice strawberry and a nice dish of cream? and I made this challenge: Is there a farmer in all this audience who would turn up his nose at a nice dish of strawberries and cream, provided by his wife and daughters from their own dairy? and I was almost dumbfounded by a farmer to my left, a few seats back, holding up his hand. (Laughter). Now, you can just imagine the position I was in. I didn't expect any such response to my challenge, but I had made the challenge and it was accepted, and there was the hand. What was I to do? My friends that were on the platform with me laughed very heartily at me, and the audience laughed. The more they saw my confusion the more they laughed, but it was only for a moment or two. As soon as I could collect myself, I stepped to the front of the platform and said, As they say at a camp-meeting, "If all the praying brethren will just come to the front, here and gather round the front, we will pray for that man.' (Laughter). That hand was down in a moment. (Great laughter). When you begin to talk about praying for any man, he generally wilts at once. (Laughter). A good Scotch friend on the platform—John MacMillan, of North Bruce—clapped his hands and said, "Capital; man, if it hadn't been for your camp-meeting experience that man had you floored." (Renewed laughter). So you see now, there is something in having a love for the strawberry, a love for home surroundings, and having experience in a Methodist camp-meeting; if it hadn't been for that I would have been in a difficulty there that I could not have got out of. I thank you again for this very kind welcome, and we will remember you kindly as long as we live in this beautiful land.

Mrs. McKinnell read an excellent paper on "Flowers":

FLOWERS.

Flowers, a writer has quaintly but most aptly designated as "God's smiles," and it requires no very great stretch of imagination to think that after the countless ages of time, during which this world of ours emerged from the chaos and darkness of its early existence and gradually developed into a place of beauty and fertility; when its mountains and valleys, clothed with verdure, and all fruit-bearing trees and vegetables necessary for human existence were made perfect; when the Great Creator of all this beauty and perfection pronounced it "good," then, from deepest valley to mountain top burst forth myriads of nature's most lovely creation, the many-hued flowers, which, not a necessity of existence, God gave to His children as a luxury to gratify the love of the beautiful which He implanted in its fullness in the souls of His first sinless creatures.

Much might be said of the value of many flowers for medicinal and other purposes, but in this paper I wish to speak of the influence of flowers as a whole upon the human family. First among the blessings they have brought to mankind is their refining influence. All the beauty of apparel and surroundings which wealth may enable its possessor to indulge in pales before the pure and perfect loveliness of a mass of flowers. Even Solomon in all his glory was not arrayed in such perfection as the simplest lily of the field.

The refining influence of flowers was well illustrated in the case of the untidy wife of an English cottager. All counsel as to the keeping of her home more tidy had failed. At last someone presented her with a little plant in bloom, a scarlet geranium I think it was; the gift was accepted and placed upon the window-ledge, and as the mistress of the house gazed at her new and pretty possession, the incongruity of its pure beauty beside her exceedingly dirty window struck her, and the casement received a long-needed cleansing. The clean window now only showed up the dirt of the floor and all the surroundings, which were gradually made to match the window and its little floral gem. Now the desolation of the exterior of the cottage began to be felt, and before long the yard was cleaned up and planted with cottage flowers. The home, which had been a disgrace to the village, became a little Eden to cheer its inmates and gladden the eyes of each passer by. The cultivation of flowers by the amateur florist has ever been found to be a most health-giving occupation. Many a weary mother has found health and lengthened life by spending a few spare minutes in cultivating her much-loved flowers in the borders around her doorway in the summer time, and caring for her window plants in the winter. Indeed, mother nature is a grand physician, rewarding the labors of those who love her with renewed vigor. In no other employment can we produce so much beauty with so little labor. The painting, the fancy work, shall I say the crazy quilt, are all beautiful in their places, but represent many hours of time bestowed upon their production, but the lovely floral gem given a little loving skillful care will develop fresh charms every day, and at last burst upon us with a wealth of beauty or a breath of fragrance beyond the power of art to produce.

In speaking of fragrance, most wonderfully has God given this gift, generally not to the flowers most prized for their showy beauty, but to the pale cream, or white blossom, or to the insignificent little bloom which would be passed unnoticed did it not appeal by its fragrance to our sense of smell.

In tropical and semi-tropical countries where the night hours are the most enjoyable to the inhabitants, God has filled the forests and glades with lovely night bloomers as the cereus, the datura, moon flower, nicotiana, and many others, nearly all of which are pale cream or white, lovely as messengers from the spirit world and rich with a perfume peculiar to themselves, bringing to the weary mortal a feeling of delicious rest and drowsiness.

Much has been said and written for and against the keeping of flowers in the living and sleeping apartments of the home. That they are not injurious is now generally allowed, indeed, I think they act as fine tests of the healthfulness of the home. Keep your house too hot or too cold for your plants and your children suffer, while the glorious sunshine which must be freely admitted to bring your flowers to perfection brings also (other arrangements of the home being equally pure) the roses of health and beauty to the cheeks of your little human blossoms.

How deeply the love of certain flowers sinks into the heart of man and thrills his whole being when brought under his notice, we can guage by remembering the flowers which have been chosen as national emblems, how the Englishman loves the rose, the Scotchman his thistle, the son of Erin the Shamrock, the Frenchman the fleur-de-lis, and the Jap his lovely chrysanthemum, though it may not be his national emblem.

The man or woman who fills the window or the front garden with lovely blossoms is a public benefactor. No one can tell how many thousands of hearts have been cheered and lightened as the eye of the passer-by rested on the bright blossoms and took in the message our Father ever sends through their eloquent silence. I must not forget that beautiful mission, "The Flower Mission," which has sent its loving messages to hospital cot and the couch of all the sick brought under its notice. How much pain has been for a while forgotten as the sufferers drank in the beauty of the little messengers, who would ever remind them that He who clothed them with such beauty was also ever mindful of the sights and tears of His suffering children.

In eastern groves where poetry dwells,
  They've given each flower a tongue ;
Invested thus, a mystical charm
  Round the simplest blossom is flung ;
The Indian pink speaks of personal grace,
  The mignonette beauty of mind,
The citron depicts a beautiful face
  When joined to a nature unkind ;
The ivy and wallflower steadfast friends
  In adversity's hour prove true ;
Beware of the foxglove, he seems a friend,
  But in heart he is false to you ;
Knight errantry's spirit is imaged forth
  By the monk's hood stately and bold,
The gentle mimosa is courteous and kind,
  While the lettuce is selfish and cold ;
And now, e're I close, a boon let me ask,
Cherish the flowers which have prompted my task.

The President : I don't believe there is a man or woman in this community that needs praying for in the connection in which that gentleman out north that I spoke of needed praying for. With such a true lover of nature among you as the one we have just listened to, I don't think you will ever be charged with neglecting the beauty of nature. That is a delightful paper, and we take pleasure in laying our hands upon it for our report for the coming year.

Miss Hodge then read a paper on " Floriculture as a Business for Women."

FLORICULTURE AS A BUSINESS FOR WOMEN.

This is quite in keeping with her capabilities and tastes. What more congenial occupation for women than caring for the beautiful plants and flowers which the Creator of all has made ! Moving this one into the sunshine, picking off dead leaves from another, giving all a motherly care ! Peering into the face of this little flower and wondering how such lovely hues can possibly evolve themselves from such a homely little plant ! Women seem endowed with a flower-loving nature, and never are quite content but when the proud possessor of the most beautiful plants that can be obtained. In these days of social progress new and broader fields are opening out for the employment of women, and they are not limited to the teaching profession, which has always been crowded—the fine arts, manufacture of artificial flowers, designing and making of bonnets and gowns, or, as a last resort, the more menial and heavy work. But now, as the years go on we see the women of our country taking up the professions. They are lawyers, doctors, and even candidates for municipal honors, they are installed as clerks in stores, typewriters and bookkeepers, and are now beginning to take a place as professional *florists.* The business of floriculture is not crowded, and there is always room for bright, thorough-going, flower-loving women to make it a success. A natural correct taste is one of the requirements, and in recognizing the beautiful in color and form, and, above all, the harmonious and artistic combinations of these, women excel, and so are unequalled as designers and decorators in this line.

There are some women to-day throughout the country doing a profitable business as florists, being themselves both growers and business managers. Though we often hear arguments to the contrary, we have in the ranks of women a large percentage as agile, clear-headed and determined, and who might just as confidently expect success, as the men who are in business. This being the case, why may they not engage in a business so eminently suited to their refinement, taste and powers as the cultivation and commerce of plants, flowers and seeds?

An absolute necessity to success in the culture and disposal of plants—and without success there cannot even be pleasure—is a complete mastery of details, and this we assert, woman has pre-eminently—as is proven by her able management of the multitudinous duties which crowd each other in the daily routine of household work. Then to study the nature, habit, and all the conditions and requirements of the many genera of the flower world is a delightful exercise of the mind, and women delve into minutiæ of the business with a zest that few men show.

A high standard of excellence is imperatively demanded by women, and where does the critic find a broader field for indulgence of discernment, comparison and taste? To be a florist should not be thought to be one whit less in importance than to be a dry-goods (or any other goods) merchant. The very nature of his calling should make him better, as intimate association with plants and flowers is in itself elevating. Many people associate with "florist" the idea of "gardener," a word which to them has meant a kind of "Jack of all trades," who looked after the cow, drove his master down town and back every day, attended the house furnace and took care of the greenhouse, kitchen and flower gardens in *his spare moments*, and was supposed to have vegetables and flowers ready for all occasions. Occasionally one would see this advertisement in the country papers: "Wanted—a gardener to look after the cow and horses, and make himself generally useful." But these are getting rare—like the Dodo bird, almost extinct.

A woman, to be a successful florist, must be on the alert for all the new and rare things in her line, and make specialties of plants which, after a fair test, she finds to be quick sellers and to give customers the best satisfaction. Again, patrons are of the most refined class of society, hence, in business associations, a florist mingles with people of taste and culture, which is one of the strongest proofs of the occupation being a suitable one for woman. In summing up briefly we find that women who wish to earn a livelihood may be successful florists. 1st. Because the business, from its nature and surroundings, is a suitable and elevating one for them. 2nd. Because they are naturally endowed with a plant-loving faculty, and to be successful one must have a congenial occupation. 3rd. Because they have the command over details necessary to the wants of so many and varied tender charges. 4th. Because when she has ventured into the, for so long to her, foreign realm of mercantile life, she has been found to be the peer of man, who so long has held the territory.

The PRESIDENT then introduced Mr. PATTULLO of Woodstock, to speak on the asthetic side of roadmaking. In doing so he remarked that nature intended us to enjoy all the good and beautiful gifts bestowed upon us. We have been given a beautiful country here; we have denuded it of its forests; and while we have so many trees and plants and shrubs given for our pleasure and profit, it is our duty to make the best possible use of them; and there is nothing that adds so much to the beauty of a country as the planting of trees after the forests have been cleared away, and especially planting trees along the roadside.

TREE PLANTING IN RELATION TO ROAD-MAKING.

Mr. Andrew Pattullo of Woodstock, after some introductory remarks as to his address given during the day, said that there is not only a monetary or material aspect, but also a social, even religious and educational aspect, to the question of roadmaking, which is closely related to our national life. The national life and the tastes of a people and the love of home are largely dependent upon the character of our roads. From outward objects our love of home and of country always springs; and in the interests of patriotism as well as of home life, we should do all we can to make our homes and farms and roadways as beautiful as those in any country in the world. I believe that one of the agencies to keep young people upon the farm is to make farm life and all the surroundings of the farm and all the rural parts of the country more attractive; and it is the truest and highest patriotism on the part of those who see these things in this way, to endeavor to bring before the people of this country the enormous importance of the improvement of our rural highways, and the practical bearing of this question upon the material as well as the higher interests of the people. Now, as to the question of tree planting in its relation to roadmaking. The trees in the form of avenues are rather the enemies of good roads than its friends. I don't want you to carry away the impression that I should not like to see you beautify the country by planting trees along the roadsides; quite the reverse, but you should always bear this in mind, that the trees should be planted some distance apart, and not in the form of thick avenues, because if they are planted too thickly, or if they are of that nature that the shade is too dense—maples for instance—unless they are carefully cared for, if planted too closely they make too much shade which produces too much dampness, which is the cause of bad roads. Don't be ambitious to get avenues of trees along each side of the road so much as to get them here and there. If you want to plant avenues, plant them on the north side of the roadway so that the sun will get at the road and the shade will be the other way. That is a most important practical detail that is sometimes forgotten. In England and other countries of Europe, they rather prefer to have their roads on the hillsides or laid out in such a way that they will not be shaded, and consequently the damp will be avoided. If you want to plant wind-breaks in the country, plant them one field back from the road. But it adds enormously to the beauty of the roads and to the picturesque appearance of the country, and to the cultivation of the beautiful in the hearts of the people, that there shall be trees along the road sides as well as in the fields and along the fences throughout your farms; and I think that you ought to be a little more liberal in this way than you have been. In the interests of roads as well as of fruit growing, I would advise you to plant fruit trees along the roads of this country everywhere. (Hear, hear.) Some will say, the boys and tramps will steal all the apples They won't do anything of the kind. They will simply take what they want and leave the rest—and there will be plenty left. You would make a great many happy boys, and a great many happy tramps in this country, and you would do them no harm, but a great deal of good. Perhaps if you fed the tramps with fruit from fruit trees along the roadside, you would have less to do in taking care of them in what we euphemistically call the "coolers" of the towns and cities. So I am very strongly inclined to plant fruit trees along the roadsides as well as the planting of maples and basswoods and cedars and other trees. In California, some years ago, I was greatly struck with the fact that there are no fences there, and yet there are thousands of acres of oranges and all sorts of fruit in that country. There is not a fruit thief in that country, because they don't require to steal—they just take all they want, and they don't take any more than they can use for immediate purposes. They are very much happier without having to break into places as we have to here. (Laughter.) This question is coming to the front as one of practical and national importance; and the Association which I have the honor to represent, has entered upon a most important work in the interests of the people. (Hear, hear.) To my pleasure and surprise we see the farmers taking this question up as their own; and I rejoice in the increasing intelligence and power of the farmers of this country; and when they make up their minds to have good roads in their own interests they are going to have them. I think that in a few years those who are opposed to road improvement will be in a hopeless minority.

THE HIGHER HORTICULTURE.

Mr. C. C. James, Deputy Minister, said: While Mr. Pattullo was speaking in regard to the planting of our roadsides with fruit trees, I remembered that in Spain they have an unwritten law that whenever a fruit is eaten the seed or the stone must always be planted; and we are told that the rustic people of that country are accustomed to push in with their heel the stones of the fruit that they have eaten along the roadside, and as a consequence for miles and miles the roadsides of Spain are lined with fruit trees, which at one season of the year are laden with magnificent blossoms, and at another time with luscious fruit. (Hear, hear.) When I was at the Agricultural College a few years ago, we had there an animal to which we always looked with a little more pride, and in which we had a little more interest than any other animal standing in the two rows of stalls; and why? Because that animal had come from the Queen's herds in England. Now, you no doubt know that the Queen is one of the best farmers in England. You also know perhaps, that the Prince of Wales is a rival to the Queen in farming; and the other day when the Duke of York was married he must needs go and buy a farm also, and set up for himself; and it was only within the last week that we read that the Premier of England, Lord Rosebery, had just sent a fine bunch of fat bullocks, 142 in number to a large butcher firm in the city of Edinburgh. Now, why do I mention that? Simply to show that in England and Scotland, as well as in some other countries of Europe, agriculture is not a profession or calling beneath the dignity of anybody in the realm, that in fact no one considers himself a true gentleman unless he has a large and well-stocked farm to which he can point as being the owner. When we come to this country do we find exactly the same state of affairs or the same opinion? A short time ago we had an election in this province; and before the full force of the farmer's vote was felt, we found here and there that the farmer was held up almost to ridicule; he was dressed up perhaps in a coat that might have served a year or two ago for an old scare-crow on the farm. The hat upon his head was rather rusty. One leg of his trousers was in his top boots and the other was outside, and his whole appearance was one that was not of the most attractive. But the elections went by and the farmer was suddenly found to be a very important man in this country; and now how do we find him pictured? What kind of a man is he now? Well, the best way that I can do is to illustrate it by this noble band of farmers we have upon the platform. (Hear, hear). Ladies and gentlemen, these are some of the farmers of this country now. (Hear, hear and laughter). Perhaps, however, they might object and say: "We are not farmers; we are fruit growers,"—and that illustrates just one little point I want to make—that the fruit growers of this country consider themselves—and I think with no little justice—the aristocracy of the agriculture of this country. There are two reasons for this. In the first place fruit growing has been a very paying industry, with some exceptions, with here and there bad years; but taking the average of the years through, I think that fruit growing has been as profitable as any other line of industry. Those men who have gone into fruit growing in favorable localities, who have gone into lines that were adapted to those localities, and have adapted themselves to their work, have in the majority of cases made a success of their work; and what is the result? After you go through a section of the country that is given over wholly to fruit growing—such a section, for instance, as the Niagara district or the district of Essex or Kent, where we have really no farmers, but altogether fruit growers—what will you find? You will find there that those men are living in rather fine houses—in just as good houses as we find in our towns and cities, and that those houses are as well furnished as any houses in our towns and cities. The surroundings are very pleasant; they have their well-kept, well-trimmed lawns, and even flowers, here and there shrubbery, neat hedge fences, and so on; and you think perhaps you have come upon the country residence of a city millionaire. Not at all; it is the residence of one of those fruit growers who is living there upon his fruit farm. You will find a piano there; you will find a man well-dressed; as I have already illustrated, these men are living examples of that. (Laughter.) You find them hale, hearty men—I don't think you would take any objection to their general appearance or their looks. (Laughter.) They seem to enjoy life pretty well. (Renewed laughter.) There is nothing like teaching by example. You find even in some places a billiard table here and there for the amusement of the boys. When you go through that whole region, you will find few men who are complaining about hard times. Well, of course they are complaining about the low prices—you can't find a fruit grower or a farmer or a dairyman or a stockman who is ever satisfied with the prices, of course—and perhaps there may be some of the same nature in connection with our manufactures and other kinds of work in towns and cities; but these men have about them an air of satisfaction and contentment and enjoyment in their work which I don't think you can find equalled in any other part of this country, unless it may be in a few sections where dairying has been for some time carried on upon a scientific basis, and where the results have been of a most generous nature—such a district as that from which Mr. Pattullo comes. These men, I say, then, are the "Upper 400" of agriculculture. (Laughter.) Now, why have they come to this locality? What interest have you in their work? The fruit growing of this province is not confined to the Niagara district. I believe you can beat them in the growing of apples in this district, but they can beat you probably in the growing of grapes, and certainly in the growing of peaches. There is a district away to the west from which some other members come, known as the Essex and Kent district, famous for its apples, its grapes, its peaches and other fruits. Then we have the district along the Georgian Bay, not far from here, famous for its plums. We have in the Bay of Quinte district, from which Mr. Boulter comes, a magnificent district for fruit culture. A little east of Toronto we have a district famous for pears and apples. So if you go over the entire length and breadth of this land you will find in this older part of Ontario soil and climate specially adapted to the growing of some kind of fruit to what we might call perfection. Well, they have come here to learn something from you in regard to your fruit growing, and they have come also that you may learn something from them in regard to their methods of fruit growing; and I simply say this as one who has attended these meetings for a number of years—a sort of unattached member of this association—that if the people of Orillia and the vicinity allow this organization to go away from here without crowding this room from day to day and drinking in all the information that can be got, they will perhaps have cause to regret it all the days of their life. It may be ten, twenty or thirty years before this association will come back again. Now, you may say they cannot do very much. Perhaps they cannot do very much for each individual; and yet they can. But suppose we look at this question in its broad aspect. In Ontario, we have 175,000 farmers, that is, men who are cultivating farms 75, 100, 125 and 150 acres in extent. Suppose we allow only forty trees per farm, we will have upon those farms 7,000,000 apple trees—I am speaking of apple trees in particular now. Then in addition there are about 110,000 families occupying lots below 10 acres in extent, and I think, taking these and the town and city lots into consideration, we can add on another million, making in all at least 8,000,000—and I am inclined to think that 10,000,000 would be nearer the exact figure. Now, supposing through the work of this association one cent can be added to the value of the product of every tree for a year, we would have added to the value of the apple product of this province from $80,000 to $100,000. "Oh, but," you say, "a cent an apple tree, that is nothing; why not talk about ten cents?" Well, then you are in the millions. Is there any man here having apple trees upon his farm or in his garden who has brought those trees to such perfection that he could not by a little more skill and a little more knowledge add ten cents at least to the value of the fruit annually produced upon them? If the lesson as to the value of spraying as taught by Mr. Craig's chart could be practised upon every farm and garden in this province, it would add not simply ten cents to the value of every tree, but an average of two or three and perhaps four times that amount. Now, this Fruit Growers' Association, with a small grant from the Government —some $1,800 in cash, together with the printing of their report—have banded themselves together that they may bring up the general condition of this fruit growing industry. I have mentioned apples simply as one. We have all the other fruits; and if here and there by bringing the people together and dropping a little hint here and there, and by starting the people thinking and getting them to read their reports of the opinions they send out, they can get these men to slightly improve on their old methods, you can see that the very small grant that the Government of the country makes to this Association would be returned not simply ten-fold but a hundred-fold, in fact, in the annual product from the fruits which are produced here year after year. But the audience to night is made up principally of ladies. I presume that most of you have come from Orillia or its immediate vicinity, and you may say, "What has the Fruit Growers' Association to do for us?" The two very admirable, very carefully prepared and very able papers read to-night show that there is at least one line of this work that is of great interest to every woman in this land, namely, the cultivation of flowers. Now, some may say there is no money in flowers unless you raise them to sell. But there is money in having flowers in every home in this country; and, as has been emphasized two or three times to-night, there would be not only money in the farmer's pocket, but there would be increased interest in the farmer's work, and more boys staying on the farm if we could by means of flowers and other things make these places more attractive. Now, could not woman's sphere in town and village and farm life be somewhat enlarged? You go into a farm house to-day, and what is ordinarily the work of the woman of the house? In some places it is the old story, "Man works from sun to sun; woman's work is never done." But there are changes going on. The introduction of the cheese factory and the creamery is taking away from the women of the house a great deal of work that hitherto has been little short of downright drudgery, nothing else in fact; and I think that every effort should be made that possibly can be made to encourage the erection of these factories and creameries all over the country so that the women of the farm may be still further relieved of that hard and laborious work that would fall to their lot. (Hear, hear.) Is there nothing to take the place of that? Is there not in connection with the fruit growing, with the small kitchen garden, with the cultivation of flowers in and about the house, but especially in connection with the cultivation of small fruit out of doors, a work that appeals to the woman not only of the country but of the towns and villages who usually have at their disposal a small plot of ground attached to the house? There are several ways in which that can be made a benefit. In the first place there is the addition to the table: and I suppose if we can by any means increase the capabilities of the kitchen and the table, if we can add anything to the possibilities along that line, we shall certainly gladden the women's hearts, and I am quite certain we shall also gladden the men's hearts in this country. (Hear, hear.) There is thus supplied an additional amount of food for the table which is not only attractive in appearance, but at the same time is the most wholesome that can be placed there. There is the outdoor work which takes not only the woman but also the children out of doors day after day to give them out-of-door recreation and exercise which cannot be called hard work at all, but is more in the line of recreation or play. And so we might go on and instance many other things. Fruit growing on a small scale or on a large scale is one of the most civilizing influences that can be introduced in connection with the agriculture of this country. So that if we can do anything to encourage a farmer on his 200-acre farm, or the man on his small 50-acre lot, or the workingman on his small lot in the town or village, to set out a new bush or a new shrub or a new tree and add a little towards cultivating this and bringing a new productiveness and value to the place, I say that every man engaged in this work will be doing something that will not only be important to society as a whole, but will also be adding another blessing to the individual members of society. We might go on at greater length. I have simply touched upon these points because this seems to be more or less a ladies' meeting to-night. Two or three of us have been put in I suppose as a background for your addresses. It really is a ladies' meeting, and this is one point that should be brought home to the ladies, and if the ladies can be convinced in regard to this matter the whole question is finally settled. Now, there is this society in your midst, and I would like to simply suggest this, that from this town alone and this vicinity there ought to be added to the membership list of this society at least one hundred new members. (Hear, hear.) That would be very small, one dollar a piece; and what would be the effect? There would be brought back into this locality month by month the publications of this society, and year after year the annual reports going into a hundred homes to be read by several hundred people. One man would pick up one paper and get one idea, and another another; and one little point might repay ten-fold the small sum of $1 which you invested at the beginning. I can emphasize this point, because I have no pecuniary interest. I am simply an unattached member of the society. This is a society that is doing a great good in this country. The fruit industry is going to be one of the great props upon which the farmers of this country must lean. The dairy industry is another prop. The old prop of grain growing has broken away under the farmers. The prop of live stock seems to have given way, though some think it will again brace up the farmer; but dairying and fruit growing seem to be the things upon which the farmers of this country are principally dependent; and when you go into the districts where fruit growing and dairying have been adopted as specialities, there you find less complaint about hard times and a more pleasant feeling pervading the general community; you find a little higher tone in the rural society—if you will understand that in the way in which I mean it—you will find there more contentment; and we can improve this as we can give an impetus to fruit growing as well as the dairying. The result will be that gradually we shall build up a more contented people not simply in our villages and towns, but also throughout the country; and I say that the hope of this country, the future of this country, is wrapped up in this one thing, in our having a happy, contented and prosperous community in our agricultural regions. (Applause.)

PRESIDENT RACE: The next item was to be an address by Mr. Morgan, of Barrie, but he is detained by professional duties. I would just say in relation to the address by Mr. James that our association does not devote itself entirely to fruit growing. We make an effort in the direction of floriculture and beautifying the home surroundings, tree planting, forestry and every thing of that kind. Personally I don't give as much attention to fruit growing as to floriculture. I cannot say to you "Come where the Lilies Bloom," but I can say to you "Come where the Roses Bloom." (Hear, hear.) I think I can say as an amateur I have the largest collection and variety of roses of any amateur in Ontario. (Applause.) I work among those roses myself; I know all about the work; and I may say there is nothing that will add so much to the pleasure and happiness of an individual as the cultivation of the beautiful in nature, and especially the rose. I am a lover of the rose, not because it is the emblem of my country, England, but for the influences it exerts upon myself, my family and the community round about. There is an influence in every rose and every flower. I do not think there is a gentleman in my town who receives so many pleasant calls from the fair ladies of the town as I do myself. (Hear, hear, and laughter.) I don't claim that there is any attraction in myself; but I can assure you that whenever there is going to be an entertainment or a social gathering in any part of the town, I have more ladies come to see me that particular afternoon than any other man in the town, because I have so many roses growing, and I take such a delight in giving them away, and I established a rule that I never give roses to any who didn't come themselves—so I insure very pleasant visits to my rosary; (laughter,) and I would recommend the good people of this town to give some time to the cultivation of roses. Christ said, "Consider the lilies." In doing so I believe that He gave as good direction to the people of that age as it was possible to give to any people, because the lily was an emblem of uprightness and purity, and of everything else that was good among the old Israelites. But you cannot give too much attention to the cultivation of all flowers. They have an ennobling influence. They appeal most directly to the finer influences and the very finest instincts of humanity. An American gentleman from Michigan visited our meeting in Hamilton, who told of having taken a drive through Ontario in order to learn for himself the character of the people. The Canadians who had emigrated to his state didn't impress him very highly. In his drive, his wife and daughter—about thirteen years of age accompanied him, and as they were passing through the district between Niagara and Hamilton, the young girl, after a long silence, during which she was viewing the beautiful scenery, suddenly exclaimed, "Papa, I know now why it is that all the people over here in Canada are such nice people, and that all the Canadians that we see over in Michigan were such a mean lot." On being asked for an explanation, she replied, "Well, papa, they have such a beautiful country over here that nobody but a mean man would leave this country and go to Michigan." (Laughter and applause.) Now, you don't want to have a higher compliment paid to your country than that; and we don't care how many mean men go to Michigan so long as we keep all the good people, such as we have met in Orillia.

Mr. Boulter moved a vote of thanks to the orchestra, and all the kind friends who had provided the evening's entertainment.

Mr. Caston seconded the motion, and spoke enthusiastically of the reception that had been accorded the members of the association on this visit. The motion was carried amid applause, and the meeting broke up at 10.30, after singing the National Anthem led by the quartette.

THIRD DAY—MORNING SESSION.

Mr. A. H. Pettit read the treasurer's and auditors' reports, and said that the treasurer had also placed in the auditors' hands the balance as it is in the bank.

TREASURER'S REPORT FOR THE YEAR 1893-4.

Receipts.	$ c.	Expenditures.	$ c.
Balance on hand December 1st, 1893	148 21	Canadian Horticulturist	1,579 97
Members' fees	2,105 57	Salary of Secretary and Assistant	1,200 00
Government grant	1,800 00	Chromo Lithographs	246 90
Advertisements	241 28	Directors' expenses	200 60
Binding and bound volumes	44 20	Express and duty	182 33
Back numbers, etc	16 47	Plant distribution	162 97
		Postage and telegrams	147 94
		Commission	124 48
		Committees	112 85
		Stenographer	88 50
		Book binding	50 03
		Printing and stationery	60 50
		Auditors	20 00
		Discounts	18 59
		Russian exchange	9 70
		Petty cash	7 50
		Care of rooms at meeting	2 00
		Balance on hand December 1st, 1894	140 87
	4,355 73		4,355 73

We beg to report that we have examined the books and vouchers and found them correct. Much credit is due for the precise and neat manner in which they have been kept.

W. W. Hilborn, } *Auditors.*
A. H. Pettit, }

REPORT OF FINANCE COMMITTEE.

We the undersigned members of the Finance Committee would report that we have carefully examined the treasurer's accounts for the year and are pleased to find them in a satisfactory condition. Notwithstanding the general depression in business, our affairs have been so managed that we still have a balance to our credit of over one hundred dollars.

We recommend that hereafter in view of our limited resources that the expenses of the chairman of committees only shall have their expenses paid for attending the annual meetings to report, and said chairman shall only report at the request of the executive.

And we consider the thanks of the association are due to the secretary-treasurer for the faithful and economical manner in which the finances of the association have been managed.

A. M. Smith,
A. H. Pettit,
W. M. Orr.

The SECRETARY in answer to questions said that the total number of paid members now is 2,200.

The report was adopted on motion of Mr. COCKBURN, seconded by Mr. MORTON.

NOMINATING COMMITTEE.

The PRESIDENT nominated A. M. SMITH and Mr. MCNEILL. The three members of the Committee nominated by the meeting were Mr. FISHER nominated by Mr. Smith; Mr. WELLINGTON nominated by Mr. Hillborn; and Mr. TOOL, of Orillia, nominated by Mr. Beall.

The Committee then retired to select the officers of the Association.

The Secretary presented the following report:

REPORT ON VARIETIES OF FRUITS DISTRIBUTED TO AND TESTED BY THE MEMBERS OF THE ONTARIO FRUIT GROWERS' ASSOCIATION.

Since the year 1875, plants and trees have been annually distributed among the members for the express purpose of ascertaining their adaptability to the various sections of our province.

Reports concerning these have from time to time appeared in the *Canadian Horticulturist*, but it is only after many years that the real value of new varieties can be definitely ascertained.

The following report will give some idea to the public of the real value of the varieties thus far distributed. The date given after the name, is the year distributed by the Fruit Growers' Association of Ontario.

APPLES.

1. The *Swazie Pomme Grise*, (1875). A small, round, russett apple, for dessert purposes; season, December to April; quality best, but tree not productive enough to grow for profit. Mr. Thos. Beall, of Lindsay, Ont., writes in 1892, "My tree is alive yet. I get a few apples from it every year. It is not sufficiently hardy, and cannot be recommended for cultivation in this district. An unprofitable variety."

The *Wealthy*, (1882). A native of Minnesota. Tree hardy, vigorous and productive. Fruit, medium, regular, red streaked with white; season, September to April. The tree begins to bear young, and produces annual crops. Of great value everywhere, but especially at the north where it is a winter apple. A. Hood, of Barrie, has kept it until June. It will perhaps replace Fameuse in time. Mr. A. A. Wright, of Renfrew, says that the Wealthy is among the hardiest and most desirable kinds to plant in the cold north. The thermometer with him frequently sinks to 40° below zero, and yet he grows the Wealthy with great success, and advises planters in that climate to set any number of trees of this variety.

The *Ontario*, (1879). A fine large, round oblate apple, yellowish red in color, of good quality, suitable for both kitchen and market; keeps until May. A report from Victoria county says, "Young trees of this variety are doing very well, and scions grafted on Talman Sweet and on Tetofsky have made wonderful growth for several years, and are bearing well. The color of the skin when mature is a bright golden yellow, shaded and overlaid to the extent of about one-half with the most brilliant carmine. It is, probably, one of the best of apples in quality, and certainly the most profitable winter apple grown in Central Ontario, but reports show that it has not proved sufficiently hardy in the vicinity of Ottawa." A Nova Scotia report says; "This apple succeeds admirably here. The tree is hardy, a vigorous grower, and an early bearer. The quality is ordinary, but the tree is enormously productive of large, long keeping apples." Mr. E. B. Edwards, Peterboro', writes: In the annual report for 1893, at page 59, I am credited with having made some statements as to this apple, which, according to my recollection, were not made by me, but by Mr. Beall, of Lindsay, who has had more experience with this tree than I have had. Before seeing the annual report—it only came to hand to-day—I was about to write to ask you or your correspondents whether the Ontario is or is not a hardy tree. My experience is very limited, but it points to the fact that the tree is not hardy, and that it is not a clean, healthy growing tree. Out of 100 standard trees of this variety planted two years ago, 25 have failed, having apparently been frozen after having made a fair start, and the stems of a number of others are scraggy and rough, indicating anything but a healthy growth. Of 60 small trees—one year old—which I set out a year ago, 8 failed altogether, and 17 others have apparently been frozen down to the snow line during the past winter. I have thus only a little over one-half of the 60 trees left in a healthy condition. My losses with other trees, some of them planted three years ago, some of them last year, and including plums and cherries, as well as apples, have not exceeded four per cent. Raised by the late Charles Arnold, of Paris. Northern Spy x Wagener

The *Canada Baldwin* (1884): The late Rev. Robert Burnet was quite an ardent advocate of this apple. He considered it a first rate dessert fruit and a good keeper, and stated in his report that the tree is very prolific. He said, "I think that when better known it will become a favorite market apple, as its color is a point in its favor, being showy and attractive." Possibly it may be more desirable for northern sections where larger but less hardy varieties cannot be grown, as it is not a large apple, and most growers of apples for profit find this to be an important characteristic.

The *Yellow Transparent* (1886): A valuable early variety. Not subject to scab. Larger than Early Harvest. Almost white when fully ripe. Ripens with Early Harvest, but hangs much longer on the tree.

The *Princess Louise* (1889): Not yet fully tested. The quality is excellent for dessert purposes; larger than Fameuse which it resembles in flavor. It has a beautiful red cheek when fully colored, and is very attractive. Its season is December to February.

APRICOTS.

The *Russian Apricot* (1890): Blooms too early, and is subject to curculio; therefore unproductive.

CHERRIES.

The *Vladimir* (1887): A small, oblate, dark red cherry imported by the late Charles Gibb from Russia for trial at the north, but proved to be of little value for Ontario. Badly affected with curculio. Mr. A. A. Wright, of Renfrew, says, "The Vladimir has been growing on my ground for four years and appears, as yet, to be quite hardy. It has a low growing bushy habit and the indications are that it will be iron-clad enough for our inclement weather. Unfortunately the fruit is not as good as we would like, but will do where we can get no better."

The *Ostheim* (1888): Like Vladimir, of little or no value in Ontario.

CURRANTS.

Lee's Prolific Black (1882): Probably no improvement on Black Naples. Very large; bunch medium; color black. A poor bearer.

Fay's Prolific (1885): A large, red currant; ripens in July. Quality very good. Very valuable everywhere.

DEWBERRIES.

The *Lucretia* (1886): Valuable where winter protection is needed, because of its trailing habit. Of little value where the finer varieties of blackberries can be grown.

GRAPES.

The *Burnet* (1878): Medium size, oval, black grape, of good quality for table; too late in ripening for all the northern parts of Ontario. The vine is vigorous and hardy. Raised by the late P. C. Dempsey, Trenton, Ont. Hartford Black Hamburg.

The *Senasqua* (1881), Bunch large, berry medium; a round, black grape of very good quality for dessert. The vine is vigorous, productive and hardy. Not reliable.

The *Moore's Early* (1882): A large, round, black grape of good quality. Ripens early in September. Succeeds at the north. Moderately productive. Mr. W. M. Paterson, of Clarenceville, Que., says of this grape that, though good in quality, it proves in that province unproductive and slow growing variety.

The *Worden* (1883): A large, round, black grape of good quality; ripens soon after Moore's Early, and is more productive. It resembles Concord, but ripens about ten days sooner. Mr. W. M. Patterson, of Clarenceville, Que., says that he thinks this grape must take the place of Concord in the province of Quebec where it is much appreciated for home use and for market.

The *Prentiss* (1884): A medium sized, round, greenish grape of good quality. Hardy. Unprofitable.

The *Early Victor* (1886): A good grape, but not sufficiently productive. A small, early, black grape of good quality. Mr. W. M. Patterson, of Clarenceville, Que., says of this grape that it cannot be classed as an early, but only as a medium early variety. Its maturity in a great measure depends upon the removal of a good proportion of its clusters soon after they are formed. It is a good grape for home use, for table or for wine.

The *Niagara* (1888): Proved to be equal to all its introducers said of it. The most profitable white grape in central or southern Ontario. An immense bearer.

The *Vergennes* (1889): A valuable red grape in southern Ontario. The quality is good and it is one of the best keepers we have. Rather late for central and northern Ontario.

The *Mills* (1891); A beautiful grape, but our season is not long enough for it. Chas. Hunter, of Niagara, says he grew it on heavy clay soil. The berries were large and black; the clusters very large and heavily shouldered. The vine a heavy bearer and quite hardy there. Ripened about the first week in October, and was then the best late black grape. The only objection is its think skin.

PEARS.

The *Goodale* (1877): A large, yellowish green pear of good quality. Season, October to December. It did not succeed in the north.

PLUMS.

The *Glass Seedling* (1876): A large, black, oval plum of good quality, ripening in August. Mr. Beall, of Lindsay, wrote of it in 1892, "Tree hardy, moderately productive, and fruit of attractive appearance, which, although only second rate in quality, commands first price in market. Can be profitably grown."

Prunus Simoni (1890): Quite ornamental in fruit, but not good for anything else but ornament.

RASPBERRIES.

The *Saunders* (1880): A hybrid between Philadelphia and Mammoth cluster. Originator, Wm. Saunders, then of London, Ont. Few reports. A medium sized, purple berry of good quality. Not recommended for profit. Was quite hardy in central Ontario and very prolific, but the peculiar color of the fruit made it entirely unsalable. Its cultivation, therefore, had to be abandoned.

The *Niagara* (1883): No report.

The *Marlboro* (1886): Large berry of fine color and, therefore, quite salable. It is quite early in ripening, but the canes are not vigorous, and it is not very productive. Somewhat tender at the north.

The *Hillborn* (1887): About the size of Gregg. It is hardy, vigorous and productive and the fruit of excellent quality. An accidental seedling introduced by Mr. W. W. Hilborn, then of Arkona, Ont.

The *Golden Queen* (1888): A sport of the Cuthbert, but scarcely as productive, and not as valuable for market. Originated in New Jersey.

The *Shaffer* (1890): A fine, vigorous grower and very productive. Its dull red color makes it less profitable than other varieties, but for home use it is unexcelled. A chance seedling and originated with Geo. Shaffer, Monroe Co., N. Y. Introduced by Chas. Green of Rochester, N. Y., 1878.

STRAWBERRIES.

The *Ontario* (1886): Of little value.

The *Jessie* (1889): A very large, showy strawberry, but not sufficiently productive to be profitable.

The *Bubach No. 5* (1890): One of the best varieties that we have at the present time; it is both large and productive.

The *Williams* (1891): A fine, large berry, very productive and profitable in some parts, on sandy soil, but on other parts reported on unfavorably.

In addition to the above the following have been distributed, but it is yet too soon to report upon them:

In 1891 Triomphe de Vienne pear; in 1892 Moore's Diamond grape, Idaho pear, Gipsy Girl apple, Round Borsdorfer apple, Blushed Calville apple, Silken Leaf apple, Little Hat apple; in 1893 Seedling black currant, Red Queen apple, Golden Reinette apple and Crimean apple.

The testing of new varieties may in future be best done by our fruit experiment stations. The Fruit Growers' Association will be able to work in harmony with these stations; and when any new varieties of fruits have been proved worthy of introduction, we hope to be able to distribute them among our members, and thus benefit the fruit industry of our country.

In the spring of 1894 we distributed the following list of plants which were furnished us gratuitously by the Central Experimental Farm, Ottawa. With the list we also publish the descriptions of the same as given us by Prof. John Craig:

Acer Ginnala, Ginnalian maple.—This was first introduced from the Amur River region in Asia, by Dr. Regel, the eminent Russian botanist. Prof. Budd, of Ames, Ia., and the late Charles Gibb, of Abbotsford, Que., were instrumental in bringing it to America; and the plants which are this year being distributed to the fruit growers are raised partly from seed grown at Ames, Iowa, and at the Experimental Farm at Ottawa. Nicholson says, "The tree is generally classed as a variety of *Acer tartaricum*, but its habit is more graceful, and in this form the leaves are prettily cut and lobed, whilst the leaf-stalks and mid rib are more deeply colored." It never attains large size, and should be ranked among the arborescent shrubs in this respect. In the early autumn it is a thing of beauty upon the lawn—resplendent in a dress of bright crimson—it glows like a ball of fire, and warms the whole landscape. Another characteristic much appreciated in the north is its extreme hardiness. At Brandon, Man., and Indian Head, N.W.T., it has been reliable so far.

Caragana Arborescens, Siberian Pea Tree, as the name indicates, is a native of Siberia, and belongs to the pea family. It grows 15 to 20 feet high, and is very ornamental in early spring by reason of its light green, feathery blossoms. These are succeeded later by small pods enclosing the seeds, which may be sown as soon as ripe or kept till the following spring. They germinate very readily. Some 10,000 were grown here last year in two beds 4x10 feet long. Like the maple, this is extremely hardy. I have been recently informed that hedges of this tree have been grown by settlers of the Mennonite districts, in Manitoba, which proves the assertion in regard to its hardiness.

Elaeagnus angustifolia, Wild olive.—This was, I believe, introduced from East Europe by Prof. Sargent, of the Arnold Arboretum, as well as Prof. Budd, of Ames. It is closely related and resembles in many respects our Western Buffalo Berry (*Shepherdia argentea*), but is much more silvery in leaf and twig. It grows rapidly, but does not attain large size. The flowers are inconspicuous, appear in early spring, and are extremely fragrant. From the name wild olive, people are occasionally led to believe that it is a fruit-bearing plant, which is quite inaccurate, as the fruit is entirely inedible. This is a very desirable bush for shrubberies.

Prunus pumila, Sand Cherry.—This plant is found growing wild in various portions of Western Canada and the United States, and being widely distributed, varies much in quality of fruit and character of growth. Its normal form is prostrate and depressed. In Nebraska it has been cultivated by early settlers for a number of years, and improved varieties will undoubtedly appear under cultivation before long. One is already being offered for sale under the name of Dwarf Rocky Mountain Cherry. This is claimed to be a special form native to certain regions of the Colorado Rockies. The fruit of the type is smaller than the Morello cherry, is nearly black when ripe, with a small proportion of pulp to pit. As a fruit plant it will be useful where the Morellos cannot be grown. It may be of much value as a dwarfing stock both for plum and cherry, and this phase is now under experiment. As a plant of possible value, and as a botanical curiosity, it is decidedly interesting.

The following description of the Sarah raspberry appeared in the Horticulturist's report for 1893 :

Sarah (Record number 4-38.).—Produced in London, Ont., by Prof. Saunders, from seed of Shaffer's Colossal. Plant a moderate grower, suckering freely, and propagating naturally only in this way. The foliage seems to be intermediate between the European raspberry, *Rubus Idæus*, and the American, *Rubus Strigosus*. The canes have been affected to some extent by anthracnose, but not more than Cuthbert or Marlboro growing alongside. Fruit large, round ; drupes large, deep garnet, firm, very juicy, pleasantly acid and exceptionally rich. A few ripe berries were found last year, and this year, at the time of the first picking of Cuthbert, but the main crop did not ripen till the season of Cuthbert was over, the last picking taking place each year from the 8th to 12th August.

A striking characteristic of this variety is its habit of ripening the fruit in consecutive order and much regularity, beginning with the terminal clusters of each branch. Of course this is in a measure true of all red raspberries, but none that I know of carry the peculiarity to the same extent.

In addition to these about two hundred each of the Pearl gooseberry and Green Mountain grape were sent out, besides one hundred Smith's raspberry, one hundred Moyer grapes, one hundred McIntosh Red apple, and several varieties of strawberries, in all about nineteen hundred packages.

For distribution in the spring of 1895 we have received from Mr. Wm. Saunders, Director of the Central Experimental Farm, the following plants :

500 Rosa rubifolia.
200 Cotoneaster vulgaris.
150 Douglas spruce.
150 Pinus ponderosa.
200 Sarah Raspberry.

In addition to these we propose sending out a few hundred more of the Pearl gooseberry and the Green Mountain grape.

All of which is respectfully submitted.

L. WOOLVERTON,
Secretary.

The SECRETARY proposed that a committee of one or three be appointed to look over this paper before its publication, and suggest any changes in the descriptions or reports of the various plants that have been sent out.

Mr. ROBSON (Lindsay): The Ontario apple grew a few years and then died. I think it will do best when grafted on some hardy variety.

Mr. MORTON: This report will be published, and if there are no limitations mentioned it will go out as the result of the Association's work.

Mr. PETTIT: I do not see why the Association should take any special action on that report. We sent out those fruits to be tried. We have now got the reports of those gentlemen as they appeared from time to time in the *Horticulturist.* Each gentleman's report is given. It is not necessary for us as a body to endorse any such report. I think the time is coming when we will get this thing a little more condensed than we have it, that is, that our experimenters will bring in a report on fruit adapted to that particular section.

The PRESIDENT: From whom does this report come?

Mr. MORTON: From Mr. Woolverton (who had retired meantime with the nominating committee). He mentioned to me that he would be glad that it should be looked over by individuals or others, and such things as thought well incorporated in it. It is by him, but it is sort of semi-official; it is by him as secretary.

Mr. M. PETTIT moved that this report be referred to a committee consisting of Messrs. Morton, Beall and Morris, to go over it and recommend what they see fit—whether it be published or changed or whatever they think best.

Prof. CRAIG suggested that Mr. White's name be put on as he is from that district.

Messrs. MORTON, BEALL and WHITE were therefore named as the committee.

REPORT OF COMMITTEE ON EXPERIMENTAL STATIONS.

Prof. CRAIG read the report of the committee for drafting a scheme for experimental stations. This report was adopted as follows:

Mr. Chairman,—Your committee, appointed at the last meeting of the association, held at Peterboro', in December, 1893, for the purpose of drafting a scheme for the then proposed system of experimental stations, beg to report briefly as follows:

It was found impossible, within the limits of the time at our disposal at Peterboro', to formulate a satisfactory plan; this fact we reported to the association, with the result that we were continued, with instructions to co-operate with the executive of the association. After considerable deliberation and correspondence a plan of action and basis for the foundation of an extended system of experimental stations was outlined. The main features of the scheme were: 1. To multiply the stations as much as possible, in order to increase to a maximum our knowledge of the behaviour of the same plant under varying conditions of soil and climate. 2. To secure to the association the valuable knowledge gained by individual experimenters, who from personal inclination have become specialists in certain lines of fruit culture. It was believed that by keeping these two thoughts in mind that a maximum of profit could be be attained with a minimum expenditure.

You are all aware that this report has been received by the executive of the association and acted upon by the Department of Agriculture in conjunction with this body.

It is a matter of considerable gratification to your committee that the initial steps in this important work have been so promptly taken, and with the hope that it will prove as successful as our warmest wishes desire, we now respectfully ask that this brief report be accepted and that this committee be discharged.

JOHN CRAIG,
A. MCNEILL, } Committee.
W. W. HILBORN,

NEW FRUITS EXAMINED, 1894.

Mr. D. W. **Beadle** read the report of the committee on new fruits respecting such fruits as were examined during this year.

Strawberries.

John D. Roberts, Cobourg, Ont., sent to Mr. Beadle a strawberry basket filled to the brim with very large strawberries, the whole number of berries being seventeen. Mr. Roberts wrote, under date of June 26, 1894, thus: "With many other trees, shrubs, etc., I have imported from France and England four varieties of strawberries. The best I have is Laxton's Noble; the birds are eating so many that I have sent some unripe." The berries arrived in good order during Mr. Beadle's absence from home, so that only one remained in condition to be examined on the 30th June, when he returned. This probably was one of the "unripe" berries. Mr. Beadle reports that this was a very large berry, of a rich, deep red color, in form regular rounded conical, flesh firm, red throughout, juicy, in flavor vinous, with considerable strawberry aroma, and that his family unanimously declare that the berries, which they considerately ate to keep from spoiling, were delicious.

Gooseberries.

John Carnie, Paris, Ont., sent a package of gooseberries, which were received by Mr. Beadle July 19, 1894, and which he describes as follows, viz.: color, yellowish green, veining of a lighter shade and very distinct; form, varying from long to roundish oval; size, above medium to small; measurements, length ¾ in. to 1¼ in.; circumference 2⅝ in. to 3⅛ in.; skin, thick and tough; flavor, acid; apparently the fruit was unripe. Mr. Carnie writes that this is the 21st crop borne by a plant gotten from the north of Scotland in the spring of 1871, which has never been affected with mildew, though surrounded by another kind covered with it. Growing in a dry, gravelly soil, Mr. Allan says, "it is, in my opinion, not a new seedling but an old variety which has been introduced under various names. Is it not Gascon? If so, it is peculiar in its tendency to drop its leaves early. The same berry has been sold as Barber's Best, Valentine, and some other names. As I find it, rather imperfect as it reached me, quality not first class, and in any case only useful for cooking." Where Whitesmith and Industry can be grown, it is the opinion of the committee that this variety cannot be considered valuable.

Plums.

Keep Brothers, Winona, Ont.; received August 24th, 1894. Three specimens. Color, marbled red on a light yellow ground; form, egg-shape; length, 1½ to 1⅝ in.; circumference, 4⅛ to 4⅜ in.; suture distinct from stem to apex; stem, ½ in. long, slender, curved, inserted in a very slight cavity; flesh, yellow, coarse; acid, not rich; seemingly not fully ripe; stone, cling, oval, tapering to a point at upper end, 1 in. long by ½ in. broad, sides moderately swollen, covered with numerous small depressions, deep suture on one edge, three ridges on the other, the centre ridge highest, with an almost dentate crest. Fruit resembles the Red Egg, but smaller, with no points of improvement over that variety.

Richard Trotter, Owen Sound, Ont.; received August 25, 1894. Color, light greenish yellow, with a few broken stripes of deeper shade; form, unsymmetrical egg-shape; length, 2⅛ in.; circumference 6 in.; suture, a mere line from stem to apex; stem, ¾ in. long, moderately stout, slightly curved, inserted in a small shallow cavity and terminating in a knob; flesh, light yellow, firm, juicy, fibrous, sub-acid, perhaps not fully ripe; stone, partially a cling, oval, thick, broad at one edge, having three prominent ridges, one of which projects into a point, the other end sharp and without suture; surface rough. This gives promise of being a valuable fruit, having, when fully ripe, a rich vinous flavor, with quality very good. The above description is made from a single specimen, the only one received by the writer. Mr. Allan says that the specimen received by him showed, indistinctly, appearances of mottled blush on sunny cheek; flesh, green with a strong tinge of yellow, a little coarse, slightly acid but pleasant, and designates it a freestone. He considers it first class for cooking, and a good shipper, and remarks that it is too valuable to be lost sight of.

Mr. Trotter has named it Lillian Augusta, and says that the tree is hardy and a good bearer.

W. H. Snelling, Ottawa, Ont., wild plum (*P. Hortulana*), August 25, 1894. Five specimens; color, marbled red on a yellow ground; form, nearly round, like a marble; length, 1¼ in.; circumference, 4¼ in.; suture, merely a line; stem, 1 in. long, somewhat curved, inserted in a very slight depression; flesh, yellow, soft, juicy, vinous, very good; stone, partial cling, flat, nearly circular, surface rough, ridges not prominent; skin, very thin and tender, with some astringency. This is one of the best of its class that we have seen; will surely be esteemed where only our native varieties endure the climate.

Mr. Allan says of this variety that it has a richness of flavor that would render it most desirable for cooking, and is of larger size and better flavor than most of our wild plums.

Tree received by Mr. W. H. Snelling, New Edinburg, Ont., from Gatineau Point, Indiana, is now 14 years of age. Has proved an annual bearer. Thus far it has not been affected by rot or the spot disease.

Thomas Holloway, Clinton, Ont., August 31, 1894. Three specimens. Tree has heavy foliage, is a great bearer, five or six years in bearing; is trained on east wall of the house; fruit, medium, 1⅜ in. long to 1⅝ in.; circumference 4½ in. to 5 in.; form, roundish oblong; suture, but a line, nearly obliterated in some; skin, yellow, very thickly sprinkled with white dots, occasional light brown specks, and a very thin white bloom, tough, but thin; stalk, medium to slender, ½ in. long, straight; cavity small, deep, clasping the stem by a fleshy ring at insertion; flesh, yellow, juicy, a little coarse, rich vinous flavor, very good; stone, cling, oval, thick, with suture the whole length of the sharp edge, and three strong ridges the entire length of the opposite edge. These plums exhale a rich fruity odor, and are esteemed by Mrs. Holloway as better for preserving than any of the other many varieties grown by Mr. Holloway.

Mr. Allan says of this: "I remark its beauty, the small pit for a seedling, and good quality as a cooker, and that it is worthy of cultivation." He adds that he knows Mr. Holloway to be a reliable man.

R. C. Bradshaw, Thornhill, Manitoba, September 3rd, 1894. Five specimens wild plums, color red, some very dark red, very thickly sprinkled with exceedingly minute dots; skin very thick; size, small, 1¼ to 1 in. long; circumference, 3⅝ to 3¼ in.; form, round; suture, a mere line; stalk, ¼ in. long, curved; cavity only a depression; flesh, yellow, very juicy, nothing but a watery pulp permeated by tough fibre, sweet, but without other flavor; quality, poor; stone, free, round, thick, no suture on the thin edge, opposite edge marked by raised line on each side; length and breadth about equal.

Mr. Allan says: "No doubt valuable there where hardiness is a requisite, as it is a really fleshy, good preserving plum, though not high flavored." Recommended for trial only in Manitoba and the Territories.

John Wood, Monticello, Wellington County, Ont., September 8th, 1894. Ten specimens, of which five were forwarded to Mr. Craig. Fruit, medium to small, 1¼ to 1⅜ in. long; circumference, 3⅝ to 4¼ in.; form, round ovate; suture, obliterated; skin, dark purple, almost black in the sun, thickly dotted all over with minute grey specks and covered with a very thin white bloom; stalk short, moderately stout, usually somewhat curved; cavity, round, smooth, of moderate depth; flesh, greenish, firm, not juicy, yet not dry, sub-acid, flavor as if unripe; stone, free; ¾ in. long by ½ in. wide, tapering at the upper end, suture deep and narrow; opposite edge sharp, flanked on both sides by a ridge, surface of sides smooth, but uneven and swollen.

Evidently one of the Damson type, but not sufficiently marked in regard to quality to entitle it to a commendation.

Richard Trotter, Owen Sound, September 11th, 1894. Suggests for name, "John A." One specimen; fruit large, 1⅞ in. long; circumference, 4¾ in; form, long oval;

suture, just a line from stem to apex ; skin, a dark purple in the sun, reddish in the shade, thickly sprinkled with minute grey specks, specially on the upper half, covered with a thin blue bloom, and both thick and tough ; stalk, straight, moderately stout, 1¼ in. long ; cavity, broad, round, shallow, with a fleshy ring which adheres to the stem at the point of insertion ; flesh, very light yellow, moderately juicy, vinous, flavor agreeable, good ; stone, partially clinging, oval, bluntly tapering at the upper end, deeply sutured, opposite edge carinate, flanked on each side by a continuous ridge ; surface of the sides somewhat roughened ; 1⅛ in. long by ¾ in. broad.

Mr. Allan says : "I consider it worthy of further test, as it is good in quality, having that of a fine cooker, and should be valuable for market."

Produced by pollenizing a local seedling named Evelyn with Fellenberg. Tree said by Mr. T. to be healthy, a rapid, strong grower with heavy foliage. Has borne for two years only. Fruit hangs well to the tree and keeps well after being gathered. Twelve specimens weighed 1¼ lbs. Commended for cultivation.

Daniel H. Hoover, Almira, September 11th, 1894. Seven specimens. No. 1. "Tree about seventeen years old ; grafted near the ground on a common blue plum. The graft received from a friend in Pennsylvania who could not give any name. Tree is iron clad and nearly black knot proof, bears regularly, generally ripening after the middle of September, but earlier this year owing to drouth and heat." Such is Mr. Hoover's account of the tree, which he thinks a seedling. With the fruit he sent three leaves from the tree. The leaves are ovate, the two smaller taper at both ends, the largest tapers towards the apex and is rounded towards the petiole ; all are coarsely and irregularly serrate ; petioles delicately pubescent, moderately stout, an inch long ; upper surface dark green and glossy, under side pale green and covered with a delicate white pubesence specially noticeable on the veining, midrib prominent with three quite strong branches from each side, size varying from 3¾ to 3⅜ in. long by 2¼ to 1¾ in. broad ; fruit, above medium, 1½ to 1⅝ in. long ; circumference, 4½ to 5 in. ; form, ovate, flattened at both ends, most so at stem end ; suture, a line from stem to apex with scarcely any depression ; apex marked by a dot slightly raised above the surface ; stem, thick, dark purplish red on the exposed side, bright red in the shade, and thickly sprinkled all over with small gray specks, the whole overspread with a blue bloom ; stalk, ¾ to 1 in. long, slender, curved at the extremity, surrounded at its insertion by a fleshy ring that adheres to the stalk ; cavity, deep, smooth, ranging from ovate to almost round, situate in a shallow depression ; flesh, yellow, firm, mealy, moderately juicy, rich vinous flavor, separating freely from the skin ; stone, small, ¾ in. long by ⅝ in. wide, deep suture down one edge, the other carinate flanked by moderate crests, outline oval, drawn to a truncated point at upper end; almost free, clinging but slightly at the edges, surface of sides almost smooth.

The color of this plum has a marked resemblance to that of Reine Claude Violette, which is the Purple Gage of Downing.

Mr. Allan thinks this possible seedling worthy of further investigation and report.

Mr. Craig is of the opinion that it is a European variety of which the name has been lost. He was unable to identify it. Worthy of further investigation.

D. B. Hoover, Almira, September 11th, 1894. One specimen of No. 2. Fruit small ; round ovate ; 1⅛ in. long ; circumference, 4 in. ; suture, a line without any depression ; apex marked with a dot ; skin, thin, light red in the shade, dark red in the sun, numerous specks scarcely visible scattered over the whole surface ; no bloom on this sample ; stalk, ⅝ in. long, curved, slender, a small ring at its insertion in a cavity large and deep for the size of the plum ; flesh, light yellow, firm, mealy, not juicy, sub-acid, not rich, separates from the skin like a boiled potato ; stone, free, thick, oval, about equally pointed at both ends, one edge distinctly sutured, the other carinate flanked with but slight ridges, surface of sides rough ; ¾ in. long by ⅝ in. wide ; much inferior in quality to No. 1.

Mr. Allan says smaller and not so valuable as No. 1, and the committee do not think it worthy of commendation.

D. B. Hoover, Almira, September 19th, 1894. Five specimens ; three leaves accompanied the fruit, which were broad ovate tapering abruptly to a point, and gradually towards the petiole, edges coarsely serrate, midrib prominent with less prominent branching veins, surface smooth and dark green, underside wooly. Fruit medium, 1⅜ in. long, circumference, 4⅝ in., usually flattened at the stem end ; skin, thin, red to dark red, thickly sprinkled with exceedingly minute dots and overspread with a blue bloom ; stalk, from ½ in. to ¾ in. long, moderately stout, straight, inserted in a broad shallow cavity ; suture, a mere line in a very slight depression ; apex marked by a slightly elevated dot ; flesh, yellow, mealy, not juicy, moderately rich, blended vinous and sugary ; flavor pleasant, quality good, seperates freely from the stone, which is nearly round, thick ; sutured on the thin edge, the other edge carinate with a strongly projecting keel, length and breadth about equal, ⅝ in.

Not superior or even equal to other named varieties of the same season.

Experimental Farm, Ottawa, September 19th, 1894. Russian plum, "Moldavka." Fruit large, oval, flattened at stem end ; 1½ in. long ; circumference, 4⅞ in. ; suture, a very slight, broad depression running from stem to apex ; skin, thick, very dark purple, almost black, marked with a few irregular russet patches of varying sizes, and a few russet dots, the whole covered with a blue bloom ; stalk, ½ in. long, moderately stout, with a fleshy adhering ring at the point of insertion ; cavity large, round and deep ; apex marked by a large round russet dot ; flesh, yellow, firm, mealy, not juicy, sub acid, rich with a peculiar disagreeable medicinal flavor ; adhering to the stone, which is oval, tapering to a point at the upper end, a deep suture in the sharp edge, the other broadly carinate, the sides swollen, length almost 1 in., breadth ⅝ in.

Only one specimen received. Season, September 1 to 6. Specimen examined had been kept in a cellar for nearly three weeks and flavor may have been affected thereby. Tree hardy and vigorous at Ottawa.

Mr. Craig is of the opinion that this would be valuable for cold climates.

Experimental Farm, Ottawa, September 19th, 1894. Russian "Early Red." One specimen ; fruit, medium, round, oval ; 1½ in. long ; circumference, 4⅜ in. ; suture, a line from stem to apex, with scarcely any appreciable depression ; skin, thick, reddish purple, thickly sprinkled with round russet dots, overspread with a blue bloom ; stalk, ½ in. long, moderately stout, curved, growing gradually stouter to its insertion in a small, round, shallow cavity, where the skin adheres to the stem ; apex indicated by a small russet dot ; flesh, yellow, firm, mealy, not juicy, sub-acid, rich, with an agreeable flavor ; adheres strongly to the stone, which is long oval, tapering towards both ends, the sharper edge sutured, the other abruptly ridged on one side giving the edge the appearance of being creased, sides swollen and rough, length 1 in., breadth, a little more than ½ in.

Tree a round topped moderately vigorous grower, thus far a light annual bearer. Promising when other varieties of *prunus domestica* fail.

PEACHES.

J. C. Davis, Freeman, Halton County, September 7th, 1894. One specimen ; fruit large ; 2¼ in. long ; circumference, 7⅜ in. ; round, ovate, somewhat flattened on both sides ; suture, shallow, well marked at both ends, though barely visible at the centre, and extending beyond the apex, which is slightly sunken ; skin, yellow, marbled with purplish red in the sun ; flesh, yellow, not red next to the stone, save a red line opposite the suture, juicy, melting, vinous, almost sub-acid, not high flavored, quality not above good, separates freely from the stone, which is large, 1⅜ in. long by 1¼ wide.

This seedling was found by Mr. Davis in an unused raspberry patch, and has borne two years.

Mr. Craig thinks it compares this season very favorably with Early Crawford in size, appearance and quality.

APPLES.

Thos. W. Letts, Calumet Island, Que.; latitude 45° north ; August 24th, 1894. Two specimens received. Size, large, 2¼ in. long ; circumference 8¾ in.; skin, light yellow, marbled with bright red in the sun, and thickly sprinkled with small irregular-shaped russet dots ; calyx open, segments erect, short and pointed ; basin small, ¾ in. broad, smooth; stem, stout, straight, ⅝ in. long; cavity deep, narrow, russeted; flesh white, not fine grained, granular, dry and moderately sweet; core large; quality barely good, quite below that of Sweet Bough.

Mr. Allan says it may be of some value where grown, but has nothing to recommend it for general use; flavor an insipid sweet; traces of dry rot under the skin. Not commended.

C. J. Willson, Greenwood, Ontario Co. August 27th, 1894. Six specimens. Tree four years old, growing in hard clay soil on a side hill; fruit small to medium, 2 to 2⅛ in. long; circumference 7½ to 9¼ in.; round to roundish oblong, obscurely ribbed in the larger specimens; skin, light yellow, nearly white, sprinkled with minute light colored dots, oily; stalk, ⅝ in. long, slender and straight; cavity, deep and lightly russeted; calyx, closed, segments long and foliaceous; basin shallow, slightly corrugated; flesh, white, grain of medium fineness; juicy, acid, not rich; core, medium; soons shows symptoms of decay; not of sufficient quality to merit dissemination.

C. F. Honner, Amherstburg, Ont., October 10th, 1894. Two specimens. Tree planted by some original settler of that district; fruit medium, round, flattened at both ends; about 1½ in. long; circumference, 8 to 8¼ in.; skin, red, light green on shaded part, sprinkled especially towards the blossom end with small white dots, in the centre of which is a russet speck, long oval in outline, often appearing as if the skin were cracked in the direction of the long diameter; stem, stout, about ½ in. long, set in a deep, smooth, round, russeted cavity; calyx, closed; basin, moderately deep, broad and corrugated; flesh, white, fine grained, somewhat tough, not juicy, sweet and rich, quality very good; core medium.

Mr. Allan says: "It may be a seedling, but so close to Bailey Sweet that it can hardly be distinguished from it. I think it is Bailey Sweet." Mr. Craig says that this apple is the exact type of Dery's Baldwin, described last year. It is pronouncedly sweet; shows some signs of apple scab; as a sweet baking apple it may have value.

The following varieties were received from the Experimental Farm, Ottawa, and examined October 23rd, 1894:

Gideon, Minnesota, by Peter M. Gideon, Fruit large, 2¾ in. long; circumference, 10 in.; conical to oblate; skin, yellow, a light blush on exposed side, mottled with yellow spots, numerous white dots sprinkled over the yellow portion; stalk about 1 in. long; cavity, deep and somewhat corrugated; calyx, closed; basin, of moderate depth, wrinkled; flesh very light yellow, grain half-fine, crisp, juicy, sub-acid, not rich, nor high flavored, probably a good cooking apple, but not desirable for dessert; core, large, also some indications of a tendency to decay at the core.

Mr. Allan says of it: "In eastern Ontario will no doubt be an acquisition in its season. It would not ship well, at all events not to Britain, but in local markets would be attractive. Coming in the same season as Wealthy it can hardly, with our present experience, be commended, as this variety succeeds so well over such a wide area.

McMahon's White, Wisconsin, G. P. Peffer. Tree is said to have endured several seasons of 40° F.; fruit, very large; 2¾ in. to 3 in. long; circumference, 10½ in. to 11½ in.; irregular oval, flattened and broad at the stem end, narrowing broadly towards the eye; skin, yellow, delicately tinted on the sunny side, sprinkled very thickly with obscure specks, especially towards the blossom end; stalk, an inch long, moderately stout, curved; cavity, deep, broad, irregular, russeted; calyx open, segments reflexed; basin, broad, deep, irregular, wrinkled; flesh, white, coarse, breaking, moderately juicy, sub-acid, with some body, yet not rich nor high flavored; core, remarkably small for so large an apple. An excellent cooking apple, well worthy of trial in our colder latitudes.

Mr. Allan says this is "an attractive apple, but the color not suited to markets. A fine fall cooker." The tree is one of the finest types of an apple tree that can be found; strong, vigorous, and healthy; has never been injured by the Ottawa winter, and has proved fairly productive.

Scott's Winter, Vermont. Fruit, medium to small: 2¼ in. to 2 in. long; circumference, 8½ in. to 8 in.; round oval; skin, greenish yellow gronnd, marbled and striped with dull dark red, very dark where most exposed, numerous minute white specks scattered over the surface : stalk, short, very stout, scarcely extending above the cavity, which is moderately deep, round, smooth, russeted ; calyx closed, segments reflexed at the tips ; basin, broad, of moderate depth, and somewhat wrinkled ; flesh, almost white, firm, juicy, almost fine grained, breaking, sub-acid, pleasant flavor at this date, Oct. 23rd. Should be tested when in season to form a just opinion of its quality.

Mr. Allan says : "Color good for market, but too small to be suitable for export, or indeed any market, and quality not good enough to recommend it for dessert." Valuable as a late winter apple. Tree hardy and fairly productive.

Orange Winter. Mr. Craig thinks it originated in Wisconsin with the late G. P. Peffer. Possibly this is identical with Clark's Orange of some catalogues, which is said to have originated in Pewaukee, Wisconsin. Fruit, large, 2½ in. long ; circumference 10 in. : irregular, conical to oblate : skin yellow, thickly sprinkled with brown specks ; stalk, short, moderately stout, usually not extending above the cavity, which is deep, broad and corrugated ; calyx, closed ; segments long, narrow, pointed ; basin, moderately deep and wrinkled ; flesh, yellowish, almost coarse, crisp, juicy, sub-acid with considerable body but not rich ; flavor, pleasant. Probably a "very good" cooking apple in its season, and ranking as "good" for the dessert. The specimens received indicate it to be an early winter apple when grown in the climate of Ottawa, and the season claimed for Clark's Orange is November to January.

Mr. Allan says : "Has a mild flavor, lacking character, that makes an apple desirable for Ontario, but valuable locally on account of hardiness. Would ship as a fall apple, but color not suitable for value."

Tree at Ottawa has proved a sound topped, symmetical grower, and has been uninjured by winter so far.

Salome. Originated in Illinois. Tree said to be a strong grower, equal to Wealthy in hardiness, to hold its fruit firmly even against strong wind storms, and to be an early and annual bearer, though yielding a heavier crop on alternate years. Fruit medium or less, 2½ to 2¼ in. long ; circumference 9½ in.; conical to oblate, somewhat ribbed ; skin at this date, October 24th, light green splashed and nearly overspread with dull red, which is very pale and much broken, profusely sprinkled with light dots ; stalk, long, 1 in., slender, curved ; cavity, broad, moderately deep or deep, smooth ; calyx, closed ; segments small, erect : basin, shallow, broad, corrugated ; flesh, greenish white, almost fine grained, crisp, juicy, sub-acid, having seemingly considerable body, but the flavor told that it was quite unripe ; core medium.

Mr. Beadle first saw this apple at a meeting of the Western Horticultural Society in New Orleans, several years ago, in the latter part of February. The samples shown there were much higher colored than these from Ottawa, and seemed to be in season at that date. They were grown in Illinois. It is claimed for this variety that with ordinary care it keeps well until July.

Mr. Allan says it "is too small for market value, and quality not quite good enough to be of value for general cultivation in Ontario."

Mr. Craig says the tree has done remarkably well at Ottawa, but has not been productive, although hardy. The first samples of fruit were produced this year on trees planted six years ago.

Cross Russian. Fruit, large, 2½ in. long ; circumference, 10½ in. ; form irregular, flattened ; skin, yellow, ground mottled and splashed with red, in some blotched with russet, sparsely sprinkled with minute dots ; stalk, short, about ½ in., stout, straight, not exceeding the cavity, which is deep and large, russeted, in some specimens slightly corrugated, in others irregular ; clayx, nearly closed ; segments, large and stiff ; basin, broad, shallow and often irregular : flesh, nearly white, coarse, not juicy, without flavor, possibly over ripe ; core, small. Of doubtful value in any climate.

Mr. Allan says, "a fine, large, high colored apple of the Alexander type, without quality." Only commended for localities where other varieties, by reason of climatic difficulties, cannot be grown.

Longfield Russian. Fruit, medium, 2½ in. in length ; circumference, 8 in. ; form, in some oblate, in others, conical : skin, yellow, slightly tinged with reddish brown on the exposed side, scatteringly sprinkled with minute specks; stalk about $\frac{1}{2}$ in. long, slender; cavity, shallow, russeted usually, sometimes the russet is wanting; calyx, open; segments, long and tapering; basin, shallow, slightly wrinkled; flesh, white, almost fine grained, juicy, mild, sub-acid, breaking, not rich, yet of agreeable flavor; core, medium, of value only where higher flavored sorts do not endure the climate. Fully ripe now, October 23rd, 1894.

Mr. Allan considers it too poor in quality to be useful. Tree hardy and very productive.

Simbirsk No. 5, Russian. Fruit, medium to small; length, $1\frac{7}{8}$ in. to $2\frac{1}{8}$ in.; circumference, $7\frac{1}{2}$ to $8\frac{1}{4}$ in.; form, irregular oval, obscurely ribbed; skin in some, dull red, in others, bright red, and some without red on shaded portion, a few minute dots can be seen on close inspection; stalk, short, sometimes not projecting beyond the cavity, stout; cavity of modern depth, round, smooth, usually russeted; calyx not always completely closed; segments, coarse, long and bluntly pointed; basin, shallow, usually irregularly plaited; flesh, greenish white, almost coarse, not juicy, not much flavor, and what there is, disagreeable as if unripe, though quite mellow and possibly over-ripe; core, large for the size of the fruit. Cannot be of much value anywhere.

Mr. Allan calls it too poor and too small for value. Mr. Craig says this fruited as a top graft for the first time.

Melonen, or Melon Apple, Russian. Fruit, medium; ovoid conical, slightly ribbed, especially towards the eye; skin, dull red, decidedly darker in the sun, a few white specks barely discernible; stalk, long, $1\frac{1}{4}$ in., slender, curved; cavity, narrow, deep, round, smooth; calyx, closed; segments, pointed and reflexed; basin, shallow, of moderate breadth, irregularly plaited; flesh, greenish white, almost fine grained, moderately juicy, mellow, bordering on sub-acid, with a poor, disagreeable flavor; core, medium. Not worth growing in any part of Ontario.

Mr. Allan considers it poor in quality and undesirable. Mr. Craig says it is rather a pretty apple but entirely lacking in quality.

Green Crimean Russian. Fruit, above medium; length, $2\frac{1}{2}$ in.; circumference, 9 in., conical; skin, lemon yellow, thickly sprinkled with light specks; stalk, $\frac{1}{2}$ in., stout, not projecting beyond the cavity, which is deep, broad and irregular; calyx, closed; basin, shallow, broad, coarsely wrinkled; flesh, yellowish white, nearly coarse, juicy, tough, almost a very mild sub-acid, no flavor; core, medium. Can hardly be of any value this side of the north pole.

Mr. Allan designated it "too poor in quality to be useful."

Bombarger Russian. Fruit, large; length, $2\frac{1}{2}$ in.; circumference, $10\frac{1}{2}$ in.; form, oblate or conical, heavily ribbed; skin, light straw color, handsomely marbled with bright red on the exposed surface, very minute white dots are thinly scattered over the red, gray specks over the yellow portion; stalk, short, stout, not usually extending beyond the cavity, which is deep, broad and strongly corrugated; calyx, closed; basin of moderate depth, broad, heavily plaited; flesh, light yellow, crisp, almost fine grained, juicy, mild sub-acid, not rich, but pleasant flavor; quality, good. A showy fruit that should be valuable in our cold north sections.

Mr. Allan describes it to be "a large, well colored, fine appearing apple, but quality poor. It would prove valuable in the 'cold north,' its size and color would sell it in the British market, and it would ship there." Mr. Craig concurs in the first opinion given of this variety.

The following varieties have been examined by Mr. Allan only, and the descriptions are his:

From John Breckinridge, Goderich, Chance Seedling. Tree about 18 years old, a strong grower, spreading, irregular, very productive; fruit, medium to large, round, conical, pale green ground, striped and splashed with red; stalk, slender, about an inch long, inserted in a deep cavity; calyx, closed, and set in a basin, sometimes slightly corrugated with scarcely any depression; flesh, white, fine grained, sub-acid, pleasant, good. Would ship well after the New Year and keeps until June. Worthy of further investigation and trial.

From Abraham Rowand, Walkerton. Fruit, large ; form and color very much like the Ben Davis : calyx set in a deep, corrugated, somewhat uneven basin ; stem, short, set in a medium cavity, color splashed all over, covered with a fine bluish bloom ; quality is good, fine grained juicy, slight tinge of pleasant acid, winter. Would make an attractive market apple, good shipper. This I consider worthy of testing further with a view of introducing

The five following varieties were examined by Mr. Allan at Montreal Horticultural Society Exhibition. The descriptions are by Mr. Allan.

Cataraqui, a cross from Spy and McIntosh Red, by D. Nicol, of Cataraqui. It has markings of both kinds, follows Spy as a keeper as well as form, but higher in color. Quality equal to McIntosh Red, valuable for eastern Ontario on account of hardiness.

Winter St. Lawrence, as grown around Montreal is one of the most attractive apples I have seen for market. It thoroughly resembles our fall St. Lawrence in form and color, only of a much darker shade in coloring, and a late variety. Would ship well for winter and I am sure would be a favorite in market. Quality follows the fall St. Lawrence I fancy, although I did not of course test a ripe one.

Seedling, grown by R. Jack, Chateauquay. Large, green with yellowish tinge, strongly resembling cranberry Pippin in form ; calyx closed, set in a deep corrugated basin ; quality good. spicy, aromatic, sub-acid ; stem stout, set in a deep basin ; many specimens showing fleshy lip on stem ; season, late fall.

Seedling, grown by Thos. Scott, jr., St. Laurent. In form and size resembling Wealthy; color green, covered with indistinct white dottings, splashed and streaked with bright red ; calyx closed, set in uneven basin, depressed and corrugated ; stem an inch long, set in smooth, deep cavity ; quality good, acid, sprightly ; flesh greenish white ; should prove a good keeper and shipper ; season, winter.

Seedling, grown by Geo. B. Edwards, Coney Hill. Large and smooth, resembling Cayuga Redstreak in form and color ; calyx closed, set in a shallow basin, smooth ; green, inclined to yellow, splashed with crimson and streaked ; stem short and stout, set in smooth cavity : quality good, sprightly ; season late fall and first of winter.

Crab Seedling. Sent by W. J. Kerr and grown by Ed. Burchell, Merrickville, Ont. Received by Mr. Craig. Quite a striking type of a keeping variety of the yellow Siberian Crab was received on October 8th, and kept in the warm temperature of my office for over a month. Size, 1¾ inches in diameter ; round, with all the Siberian characteristics, but not markedly astringent. On account of its keeping qualities it should not be lost track of.

Plums. From A. M. Smith, St. Catharines, Ont. Received by Mr. Craig. Size, 1⅜ by 1¼ inches, nearly round. Blue, with a thick purplish bloom, stem ¾ to 1 inch long; cavity, narrow and small, suture indistinctly marked ; skin, thin; flesh, brownish color ; juicy, fairly sweet and moderately firm ; adherent to stone, which is small and roundish. Evidently of the Damson type, valuable on account of its lateness.

CONDENSED REPORT OF NEW FRUITS TO PRESENT TIME.

Report by the standing committee on new fruits, of progress made in summarizing all the work of the Association for the past and preceding years relating to new fruits.

Upon an examination of the work of the Association relating to new fruits during preceding years, your committee found that, beginning with the year 1868, new fruits had been brought to the attention of the Association during nearly every year of its existence, and that a great mass of material had been collected in its reports relating to new varieties of every fruit grown in this climate. We also saw that in order to make this material available it would be necessary to bring it into a condensed form, and that this involved a considerable amount of labor, so great that it seemed advisable not to undertake to prepare a condensation of the whole for submission at one time. Inasmuch as the apple is our most important fruit, it was thought best to take that up first. Accordingly a table has been prepared showing as fully as possible the name and address of the exhibitor, the year when exhibited, the size, color, texture, flavor, quality, use and season of the fruit, and the remarks of the committee that examined the exhibit.

We learn from this table that there has been, during the past quarter of a century, a hundred exhibitors of new fruits, who had taken the pains to show us not less than a hundred and fifty varieties of new apples. Of these some thirty varieties are specially mentioned by the examining committee in terms such as the following, viz. : "Very promising," "think favorably," "desire to see them when in season," "not to be overlooked," "to be looked after," "worthy of trial," "well worthy of future notice," "prize of $5 awarded," "worthy of extended cultivation," "first prize," "worthy of cultivation," "recommended for general cultivation," "deserves to be widely disseminated," "advise that the tree be inspected," "commended," "highly commended," and the like. We also learn that in by far the greater number of cases there has been nothing done in the way of following up the recommendations made, so that in the great majority of cases no practical benefit has accrued to the country from these labors. A glance at the table shows also that the information given regarding these fruits is often seriously defective. Very often no mention is made of the season of maturity, none of the quality, and often the recognized pomological terms for quality, "good, very good, best," have not been observed, so that it is not possible to know even when the term "good" is used just what meaning is intended. So likewise of all the other columns of the table, either nothing is said, or it is difficult to decide what weight should be given to what is said. When it is said that the flavor is "pleasant," or "aromatic," or "sprightly," without any further qualification, we are yet in the dark as to whether it is acid, subacid, or sweet.

It is probable that some of these apples are well worthy of being fully investigated, possibly young trees, or if not, very probably scions could be procured of many of them, and these, by grafting into vigorous trees in some of our experimental stations, could soon be brought into bearing, and the value of any of them for cultivation, either general or local, be ascertained.

Your committee deem it due to those who have been at the pains to submit new fruits, especially in the case of Canadian Seedlings, and due to the beneficial work of our Association, that the examination into the value of them be completed as speedily as possible. To do this would entail some correspondence, as well as securing scions of the most promising varieties which might be propagated for trial at the various testing stations for apples now being inaugurated by the Association. This phase of the question is respectively submitted to the Board of Directors for their consideration.

SEEDLING APPLES.

O. T. Springer, Burlington, 1868 : medium size, sub-acid, good, desert, February-March. Tree very hardy, annual bearer.

James Cowherd, Newport, 1869. No. 2 like to E. Spitzenberg ; very promising.

James Cowherd, Newport, 1869 : medium, very acid. No. 5 probably good keeper : not fully ripe.

James Cowherd, Newport, 1873. Committee thought favorably of seedlings exhibited and desired to see them when in season.

A. Forfar, Scarboro', 1869 : medium, yellow, fine grain, agreeable, promising, desert, fall, No. 1, not to be overlooked.

A. Forfar, Scarboro', 1869 : green, firm, rich, promising, winter. No. 3 to be looked after.

W. E. Coleman, Lyn, 1870 : very large, red, sub-acid, promising, late fall. Worthy of trial.

Mr. Attwood, London, 1870 : large, colored like Ribston, flavored like Ribston, very good. Best brought to our notice ; is it a Canadian seedling ?

D. Hammond, Sheridan, 1870 : handsome, mild. Worthy of trial.

D. Hammond, Sheridan, 1872 : medium to large, crimson, fine grain, sub-acid, good, October. Tree very hardy.

D. Hammond, Sheridan, 1873 : large, yellow-red, tender, sub-acid, very good. Well worthy of further notice.

J. W. Johnston, Campbellford, 1872: medium, red, sub-acid. Tree 29 years, in bearing every year; hardy. $5 awarded.

W. L. Stott, Markham, 1873: above medium, yellow-russet, fine grain, aromatic. Prize $10; worthy of extended cultivation.

Mr. Stibbard and Mr. Russell of London, Mr. Cowherd and Mr. George Smith, of Brantford, in 1873, all exhibited seedlings which committee desired to see when in season.

D. Nicol, 1873: promising.

Levi Turney, Colborne, 1873: large, first-class, baking. Tree over 70 years old.

Charles Arnold, Paris, 1874: $10 award for seedling. From Spy and Wagener.

Charles Arnold, Paris, 1879: fine size, crisp, table and cooking named Ontario.

P. C. Dempsey, Albury, 1874: above medium, sub-acid, very promising, named the Albury. Tree hardy, good and regular bearer; first prize.

P. C. Dempsey, Albury, 1874: full medium, fine grain, sub-acid, cooking, named Redner's seedling. Tree hardy, extremely productive, worthy of cultivation; first prize.

P. C. Dempsey, Albury, 1878: above average, red, aromatic, market, named the Hastings. Recommended for general cultivation; good crop every year.

P. C. Dempsey, Albury, 1880: large, greenish, firm, sub-acid. Possesses more merit than the majority of this class.

P. C. Dempsey, Albury, 1880: medium, green-yellow, sub-acid, high flavor, named Prenyea. Deserves to be widely disseminated.

P. C Dempsey, Albury, 1881: dessert, October, named Prenyea. Said to be one of the best of its season in Prince Edward county.

P. C. Dempsey, Albury, 1881: large, green, cooking, mid-August, named Taylor Fish. An English apple.

P. C, Dempsey, Albury, 1881: medium, high, the Hastings. Reputed one of the best of its season for table and market.

P. C. Dempsey, Albury, 1882: Prenyea of Prince Edward county. Sweet. Lacks character to entitle it to general cultivation.

P. C. Dempsey, Albury, 1882: Hastings, local, tree hardy, suitable to cold districts, productive. Said to be a fine shipper.

P. C. Dempsey, Albury, 1882: Taylor Fish, at Cherrydale farm, Huron county, considered best large fall apple grown there, especially for cooking.

P. C. Dempsey, Albury, 1882: large, white-red, crisp, sub-acid, medium, August. Grand Sultan, foreign, large cropper.

P. C. Dempsey, Albury, 1882: red, sub-acid. Grand Duke Constantine, foreign.

Geo. Peacock, Mt. Salem, 1874: handsome, sweet, baking. Tree owned by Samuel Tedford, Gravesend, Elgin county.

David Bradt, North Glanford, 1874: large, russet, good, promising. First prize.

David Bradt, North Glanford, 1877: medium to large, russet. Shown as a late winter apple for the $50 prize. Committee on 7th February, 1877, in doubt and advise a committee to investigate.

E. Blagden, 1874: handsome, good, fine. So like Spitzenberg, committee advise the tree be inspected when in fruit.

Thomas Caldwell, Dundas, 1874: very large, red. Resembles Blenheim; frozen; merits not ascertained.

Jas. Clarke, Belleville, 1875: medium, yellow-red, crisp, sweet, fall. Prize $5; advise its wider cultivation.

A fine display: of seedlings, October 6th, 1875, 19 lots winter fruit, cannot now be passed upon. They came from Mr. Wilson, Whitby; J. Graham and B. H. Vandevoort, of Sidney; H. J. Lott, Samuel Wiener, Jordan; P. C. Dempsey, Albury; Messrs. Cosner, of Bay of Quinte, and Hon. Lewis Wallbridge, Belleville.

Mr. Bell, 1876: good, dark-red. Graft obtained from original tree about 20 miles north of Ottawa, Gatineau Belle.

A. T. Gregory, Mt. Forest, 1875: January. Very fine, late fall, recommended for cultivation; if a seedling, worthy of a prize.

A. T. Gregory, Mt. Forest, writes: See Report, 1876, page 49, that it is a seedling; tree early bearer; now 12 years old; requests inspection.

Daniel B. Hoover, Almira, 1876: medium. Tree standing on lot 34, concession 6, Markham; seed sown in 1813; very hardy.

Daniel B. Hoover, Almira, 1879: medium, red, fine, sub-acid, almost equal to snow, January. No. 1 recommended for cultivation; tree hardy, productive.

Daniel B. Hoover, Almira, 1879: large, coarse, fine, cooking. No. 2 tree 35 years old; hardy, productive: named by Mr. Hoover Lady Washington or Hoover's Favorite.

Daniel B. Hoover, Almira, 1882: medium, red, sub-acid, good, summer. No. 1.

Daniel B. Hoover, Almira, 1882: medium, yellow, pleasant, late fall to January. No. 2.

Daniel B. Hoover, Almira, 1882: below medium, red, crisp, sub-acid, winter. No. 3.

Daniel B. Hoover, Almira, 1882: large, red cheek, sub-acid, good to very good, winter. Hoover's Favorite; would ship well.

Daniel Wismer, Jordan Station, 1877: large, handsome, tainted by cellar. $5 prize; he writes February 6th, 1877, tree bears every year.

Wm. Russell, London, 1877: Resembles Gravenstein, but past its prime. "London Beauty."

J. Burrows, Drummondville, 1877: medium, green-yellow, sub-acid. Want to see it in season; now October 31st.

Wm. Roy, Owen Sound, 1877: medium to large, handsome. Want to see it in season.

Wm. Brown, Sydenham, 1877: large, not ripe. Want to see it in season.

John E. Bull, Weston, 1877: large, yellow, sub-acid, good to very good. No. 1.

John E. Bull, Weston, 1877: yellow-carmine, fine grain, sub-acid, first-rate, fall. No. 2; prize $5.

James Clarke, Cannifton, 1877: large, striped, sub-acid, early winter. Recommended for trial.

Seth C. Wilson, Whitby, 1878: medium, good. Superior to Early Harvest for dessert.

T. C. Wheatley, Sarnia, 1878: medium, handsome, very late winter. Said to keep until April.

Major Anderson's, 1878: fair, yellow, good, fall. Commended.

Stead's Seedling, 1878: small, handsome red, good, table. Commended.

T. G. Vidal, Sarnia, 1878: large, handsome crab No. 260. Highly commended.

A. Hood, 1878: crab. Mr. Hood says fit to compete in flavor with any apple; ripe about Sept. 1st.

L. Woolverton, Grimsby, 1879: above medium, yellow, bright, blush, crisp. Named Princess Louise.

Wm. Roy, Owen Sound, 1879: heavy blush, pleasant. Gives promise of rating well.

Seth C. Wilson, Whitby, 1879: large, yellow-green, sub-acid, early September.

At meeting of February 9th, 1880, a committee on New Fruits was appointed. A. McD. Allan, Chairman.

J. H. Ramer, Markham, 1880: large; resembles Sweet Bough; out of season.

A. M. Smith, 1880: green-blush, sweet, good, cooking, winter. Cannot decide it to be really a seedling.

Geo. Cox, Goderich township, 1880: yellow blush; firm, tart, late winter.

Dr. Watt, Niagara, 1880: russet, fine, pleasant, dessert. Past its season, February 19.

At Provincial Exhibition, 1880: medium, yellow red, fine, sub-acid, late fall. "Grimsby Beauty;" very handsome.

J. G. TenEycke, Grimsby, 1880: above medium, yellow green, fine, sweet, good, fall.

Wm. Roy, Owen Sound, 1880: medium, good, dessert, fall.

Wm. Roy, Owen Sound, 1880: winter, three varieties; desire to see these in season.

Mr. McCullouch, Sault Ste. Marie, 1880: a number of seedlings of Fameuse, several very promising, all fall. None named or numbered; can't designate which seemed most valuable.

Provincial Exhibition, 1880: Pomme d'Or, too wild to merit place in a collection.

Provincial Exhibition, 1880: Fallawater seedling. No improvement on its very ordinary parent; quality inferior.

Report of 1881: Leslie crab, large, cream blush, sweet, preserving. Tree hardy, productive.

Report of 1881: Baxter's red, very large, red, cooking, winter. Ironclad; fine shipping apple; originated at Brockville.

Report of 1881: Cellini, large, green yellow, October. English; promising well.

W. W. Austin, Oxford county, 1881: medium, russet, crisp, sub-acid, best, winter. Even form, as if turned in a lathe; would sell as high or higher in Europe than American Golden Russet.

Report of 1881: Cliff's Hawthornden, waxen, poor, as seen fall of '81 at Provincial Exhibition. Native of Prince Edward county; not desirable for extended cultivation.

Report of 1881: Princess Louise, medium, firmer than Fameuse, improvement on Fameuse, dessert. Should be brought into general cultivation.

Report of 1881: seedling of Spy No. 1, large, yellow green, sweet, pleasant, winter. Grown by Chas. Arnold, Paris.

Report of 1881: seedling of Spy No. 2, medium, russet red, firm, acid, pleasant, winter. Grown by Chas. Arnold, Paris.

S. Fowler, Cambray, 1882: medium, two seedlings over-ripe, probably good cookers. January 18, '82.

O. F. Smith, Glanford, 1882: medium, red, over-ripe. January 18, '82.

John McGill, Oshawa, 1882: small, russet, good, May-June. Tree heavy bearer, No. 1.

John McGill, Oshawa, 1882: large, green, medium, December-February. Tree hardy, No. 2.

John McGill, Oshawa, 1882: large, russet blush, January-March. Tree very productive, No. 3.

John McGill, Oshawa, 1882: medium, russet-green, May-July. Tree very productive, No. 4.

John McLean, Owen Sound, 1882: White-blush, sub-acid, fair, summer.

J. B. Walker, Grimsby, 1882: medium, russet, medium, winter.

Alex. Robertson, Verulum township, 1882: green, sprighcly, good, winter.

Mr. Wigginton, Goderich township, 1882: medium, crimson, fine, sprightly, good, fall.

Mr. Saunders, Owen Sound, 1882: medium, yellow blush, fair to good. Fine shipper.

Wm. Brown, Owen Sound, 1882: above medium, russet, good, good keeper. Fine shipper.

Wm. Brown, Owen Sound, 1882: resembling Grimes' Golden, long keeper. Fruit of 1880 in fair condition in August, 1881.

Report of 1883: "Nonpareil," medium, yellow green and dull red, crisp, sub-acid, good, excellent keeper. Nova Scotia; largely grown there for the English market.

Report of 1883: "Nonpareil russet," small, crisp, fair. Nova Scotia; largely grown for the English market.

R. Brecon, Richmond Hill, 1883: No. 3, a russet, has character, poorly kept, may be of some value.

Report of 1884 mentions Salome and Belle de Boskoop as attracting some attention in United States.

Report of 1885: no report from New Fruits Committee.

1886: no report on new fruits.

1887:

1888: nothing on new fruits.

S. Reany, north Pt. Elgin, 1889: above medium, golden yellow, fine, sprightly vinous, very good to best, fall.

James Kean, four miles north of Orillia, 1889: below medium, crisp-fine, rich aromatic.

S. P. Morse, Milton, 1889: tender, sub-acid, of early harvest.

T. C. Robson, Minden, 1889: above medium, yellow red, fine, pleasant, fair dessert, good cooking, October-November.

F. M. Robertson, Minden, 1889: medium, $2\frac{5}{8}$ x $2\frac{1}{4}$, yellow red, fine, crisp, sub-acid, not high, pleasant eating, good cooking, November.

B. Willson, Wingham, 1890: very large, yellow red, tender, pleasant, good, cooking, October.

The Haliburton, north of Peterborough, 1890: $2\frac{5}{8}$ x $2\frac{1}{8}$, yellow red, fine, acid, poor, end September.

R. W. Sheppard. jr., Montreal, 1890: larger than Fameuse, otherwise the same except in color. "Green Fameuse."

Mrs. Renaud, Grenville, P.Q., 1890: large, green red, vinous, good, March-July. "Renaud."

J. P. Cockburn, Gravenhurst, 1890: medium, red, fine, good, October. "McMillan," origin county Stormont, lat. 46° N.

R. Brodie, Montreal, 1890: large $3\frac{1}{4}$ x $3\frac{1}{8}$, red, coarse, sub-acid, good, end September. "Golden White," Russian.

G. G. Henderson, Hamilton, 1890: medium, pink and red, tender, aromatic, very good, winter.

F. W. Coate, Cape Elizabeth, 1890: medium, $2\frac{1}{2}$ x $2\frac{1}{2}$, yellow red, half fine, nearly sweet, probably good, too ripe. Berezinskoe Beresina, Russian, from F.G.A.

Mr. Greenfields, received from Ottawa, 1891: below medium, green red, tender, sub-acid, possibly good, cooking, May-June. Quality poor, but scarcely ripe enough to be fairly judged.

Rev. R. Lewis, Maitland, 1891: medium to large, crimson, tender, aromatic, very good, October-November.

D. Nicol, Cataraqui, 1891: "Mallory," resembling Fameuse, and of same season. Seems a good early market sort.

D. Nicol, Cataraqui, 1891: "Gibson," large, like Black Detroit in color and flavor. Might be profitable for near market.

D. Nicol, Cataraqui, 1891: large, highly colored, like Red Canada, more conical, lacking sprightliness, fine keeper and shipper.

D. Nicol, Cataraqui, 1891: "Parrot," medium red, good shipper, late. Unless tree is extra hardy not commended for propagation.

D. Nicol, Cataraqui, 1891: "Henderson," medium, early winter. Nothing striking in character.

C. B. Rice, 1891: "Oakland." A nice apple.

J. P. Cockburn, Gravenhurst, 1891: small, poor, poor. Duchess x Snow.

Thos. Beall, Lindsay, 1891: fair, yellow. Received 2nd prize at Dominion Convention of Fruit Growers.

P. C. Dempsey, 1891: medium to large, red, fair, late winter. Commended; No. 87; G. Russet x Spy.

P. C. Dempsey, 1891: small, red. No. 90.

T. H. Rack, 1892: large, red, good, good, fair keeper. Highly commended for propagation; grown Hibbert, South Perth.

S. C. Wait, St. George, 1892 : small, poor. Lacks size and quality for profitable market.

"Dery," Syn., Alexis Baldwin and Pomme de Fer. Received from J. L. Dery, Mt. St. Hilaire, P.Q., October, 1891-92 ; tree examined October 23, 1892.

W. H. Murphy, Ottawa, 1893 : "Calumet," medium to large, large, red, firm, sub-acid, good, March-April. From seed of American Baldwin planted seventy years ago ; bears moderate annual crops.

W. H. Murphy, Ottawa, 1893 : "Calumet," medium to large, 3¼ x 2½, yellow red, firm, sub-acid, good, all winter. From seed ot American Baldwin planted seventy years ago ; bears moderate annual crops.

Prof. Craig : The chairman of this Committee has been to a great deal of trouble in looking up a number of new fruits that have been exhibited before this Association for the last twenty years, and his report will show that we have had from time to time a great many new fruits exhibited, some of small value no doubt, but others probably of a great deal of value. These have been lost sight of from year to year. Now, I think that the recommendations that the chairman of the committee makes at the end of his report should have some action taken thereon, and I would move "That the chairman of this committee be authorized to correspond with exhibitors of seedling apples which have been reported favorably upon by the fruit committees of the Association from year to year, with a view of obtaining further information in all cases, and scions for testing where deemed advisable ; and further that the chairman of this Committee be appointed a permanent officer of the Association, at a salary commensurate with the amount of labor involved." As a means to facilitate the work I would say that these scions which might be obtained by this chairman might be sent to me at Ottawa, and I would engage to propagate a sufficient number in each case to distribute to the trial experiment stations working in connection with the Association. That would give us an opportunity of getting at the values of these fruits, and at least would enable us not to lose sight of the varieties here exhibited from year to year, and also encourage the originators of new varieties to bring them before the Association.

Mr. A. H. Pettit : I have pleasure in seconding the motion.

Mr. Morton : I would like to know what you mean by the chairman of the committee being appointed a permanent official ? As I understand it now, we have a standing committee upon New Fruits. Do I understand that an individual be appointed, or that an officer be appointed permanently ? If the officer is to be appointed permanently—and in whatever remarks I make I am not to be understood as speaking against the chairman of the present committee—if it is proposed that an individual shall be appointed permanently I decidedly object to it on principle. In this institution we have no person appointed for longer than year to year. If that is the construction that is placed upon that I decidedly object to any individual, I don't care who he is, being appointed permanently. He should be appointed from year to year. If on the other hand you mean that this officer should be appointed permanently I think it is already covered. We have a standing committee appointed, and that must necessarily be permanent until it is changed ; but it means that the whole three members of the committee are permanent officers of the organization ; and if it is thought that instead of having a committee of three there should be one, it seems to me the motion should be in the direction of limiting that committee to one.

Mr. White : It seems to me the essence of the motion is that the chairman of the committee should be a paid official and that the work is greater than should be done by any individual without remuneration.

Mr. A. H. Pettit : Our committee meet to examine new fruits year after year, and they bring in a report. That report is brought in to-day taking up a whole series of years ; and those fruits, many of them, are lost sight of entirely. We might direct that these specimens be further tested at our experiment stations, and if we have a fruit that is worth cultivation we have the assurance that it will be cultivated and disseminated throughout the province.

Prof. Craig : In answer to Mr. Morton I may say the resolution referred to the office.

Mr. MORTON: If you think the chairman should be paid, then you should omit all reference to his being a permanent official, and direct that he should be paid according to the decision of the directors.

Prof. CRAIG: I think Mr. Morton's views are quite reasonable. I will amend by saying that the chairman of this committee be appointed from year to year instead of being a permanent officer.

Mr. MORTON: I would think this would cover the ground, "That the chairman of this committee be paid such salary as the directors may approve."

Mr. MCNEILL: There is still another feature of it. Without appearing dogmatic at all, I think there is a precedent here that may be established—that we need to carefully consider before establishing it. There is some objection to expending money except in the most judicious circumstances. Is it wise to furnish the society with another paid officer? The Secretary is paid; I think that is the only paid officer in the association. Am I right?

The PRESIDENT: Yes.

Mr. MCNEILL: It is a very dangerous thing to introduce the principle. It is doubtful whether the precedent is not a dangerous one. I am in favor of paying well any man we do pay for his services, because it is understood he gives his whole time to the work, and the pay must be commensurate with the ability displayed; but where people give their time to it, not expecting remuneration, it is a very dangerous thing to introduce any principle of paying a certain individual because he gives a little more time than another. The same question comes up with payment of singers in choirs. By introducing the principle of paying the first soprano, we have had to pay the first bass, then others applied and we have had to dismiss the whole of them.

The SECRETARY: I have not heard the discussion and am not fully conversant with the points, yet there is one feature that we might consider. It is this, that we have already started out upon a new venture, and that is the experiment station work. Now, in each of these stations there is an experimenter who is to receive all new fruits, plants of all new varieties, and test them thoroughly, and every year report upon those, what they are worth in his vicinity, and how the plants and trees grow, whether they are vigorous or not, and whether adapted to that locality, and so on; and I just simply throw out this for your consideration, will not the reports of these various experimenters —we will have ten of them—cover the identical ground which you are proposing now to be taken up by this new official? I had an idea they would.

Mr. A. H. PETTIT: That is the very point on which I seconded the motion—that we shall have some authority to make the decision that a certain new fruit that he has found is worthy to be recommended to those men for cultivation. They might propagate hundreds of plants that would be of no value. We don't want the time wasted, but if it is worthy to be cultivated, the recommendation then will come from the chairman on new fruits for that purpose.

The SECRETARY: Of course the experimenter will test all new plants of every promising variety that comes up.

The PRESIDENT: This plan would be a feeder to the experiment stations.

Mr. MORTON: If that is the decision, we have nothing to do with it. The Government has seen fit to establish experiment stations and they ought to pay the cost of them, and we ought not to be burdened. It is true that we have something to do with it, but we are not responsible for that—we are simply as it were in affiliation—we are the report body upon the board of control; and if this person is to supplement the work of the board of control, then I say that the board of control should be the ones who should appoint that officer and make provision therefor. I think if this Association in their discretion wish this report on new fruits to be continued, it is unjust to ask the preparation of it without remuneration, and I for one would be totally averse to having an individual give so much of his time as must have been given for the production of that report without a certain amount of remuneration.

The PRESIDENT : I think Mr. Morton is wrong in one respect. If the Government sustains these experiment stations, we have a perfect right to provide them with the plants and recommend those plants. Why throw the whole thing on the Government? They have just got to go to work and hunt up those plants themselves. Now, it is proposed that this committee be a feeder to the experiment stations.

Mr. MORTON : You find in the constitution here how plants are to be given to them.

Mr. PETTIT : The Committee is appointed to-day on new fruits, and they make their report. Their report is quite favorable on three or four varieties, we will say. What are you going to do with it? If this committee consists of one person he could give more time and attention to it than a number of persons changed each year. It would be a guard to our experiment stations to have the fruits recommended by him for testing instead of the stations testing hundreds of things that are of no use.

The motion was put and as amended was carried.

REPORT OF NOMINATING COMMITTEE.

Mr. SMITH read the report of the Nominating Committee. The names of officers elected will be found on page 2.

The new President, Mr. M. PETTIT, was escorted to the chair and said : Gentlemen, I thank you for the honor you have done me to-day in electing me as your President. I little though twenty years ago or more, when I became a member of this association, that I would ever be called upon to fill this honorable position, and I assure you I shall put forth every effort to advance the interests of the fruit growers of this province, and in attempting to do so I kindly ask the co-operation of the officers and members of this Association. (Applause.)

Mr. RACE : You see now I cannot deliver the President's address—(laughter)—but I will have to deliver my address as the ex-president of the Association.

(The address appears on page 3.)

Mr. McNEILL : Will you allow me the pleasure of moving a vote of thanks to our retiring President Whether it is a usual thing or not I think a special vote of thanks is due him. He has filled the office not only with credit to himself, but with honor to the Association, and it would be a great mistake indeed to allow Mr. Race to retire without recognizing in some manner the ability with which he has performed his duties in the chair.

Mr. TURNER seconded the motion, which was carried amid applause. The vote was tendered to Mr. Race.

Mr. RACE : I assure you I appreciate very highly this expression that you have given. I retire from the position with a great deal of pleasure, because when I took it I felt I was not doing justice to the Association, as I didn't think that I was sufficiently interested financially in the results of the Association to warrant me assuming such a position. I have believed that these positions should be occupied more by men who are actually engaged in fruit growing, and putting me in the position while I was not actually engaged in fruit growing was something of an innovation ; but if I have contributed anything to the interest and profit and success of the Association, I assure you I am very much pleased to know that I have done so. My intercourse with the members of the Association has been very pleasant and I shall never forget it, and I would not like to be cast out of it ; and my influence, sympathy and hearty co-operation is with you as long as you will find me in the flesh, though I have not very much flesh to be in. (Laughter and applause.)

Mr. D. W. BEADLE moved the following resolution as to the death of David Nicol, which was seconded by Mr. Beall, and carried by a rising vote :

Resolved, That this Association desires to put on record its sense of the great loss which has been sustained not only by the Association, but by the entire province by reason of the sudden demise of the Director for the 3rd Division, Mr. David

Nicol, of Cataraqui. Chosen director in 1889, he brought to the F. G. A. of Ontario the benefit of his experience of many years as a fruit grower and horticulturist in the peculiar climatic conditions of that division, and won the esteem of all by his wise counsels and deep interest in every effort to advance the prosperity of our country. Honorable, upright and courteous in all his intercourse, we deeply mourn his sudden death, and tender to his bereaved family our deepest sympathy.

Mr. Morton reported from the committee appointed to examine the Secretary's report on the Distribution of Fruits, recommending that the report be adopted.

C. W. Hartman (Clarksburg) read Mr. Mitchell's paper, that gentleman having been detained by sickness in his family.

FRUIT GROWING IN THE BEAVER VALLEY.

By Mr. John Mitchell, Clarksburg.

For the benefit of those who have never seen it, I will first endeavor to give a brief description of the "Beaver Valley."

It begins at Thornbury on the south shore of the Georgian Bay, and extends southwest for about twenty miles to Eugenia Falls, and is drained by the Beaver River. It has an area of about 280 square miles, of very fertile land. The scenery throughout the whole length of the valley is most magnificent.

Imagine yourself upon one of the lofty hills overlooking the beautiful farms, with orchards and fields of waving grain stretching out across the valley and up the mountain slopes as far as the eye can reach, with the towns of Thornbury and Clarksburg and the blue water of the Georgian Bay spread out before you as if it were almost at your feet. Such is a summer scene in the Beaver Valley.

It is admirably protected on the east and south by the Blue Mountains, and on the west and northwest by a chain of lofty hills almost as high as the mountains themselves, thus giving it a decided advantage as a fruit-growing district over many sections further to the south. Fruit growing has already attained a prominent place. Thousands of young trees are being set out and in the near future there will be a very large export trade in winter apples. Already two large apple houses have been erected at Thornbury where thousands of barrels of the best varieties of winter apples are stored, graded and repacked, each variety being shipped out in its proper season for use. Nowhere, perhaps, do such varieties as Spys, Baldwin, Ben Davis, Golden Russets, and Kings attain such perfection in quality and quantity as here. I have seen sixteen barrels of fine Baldwins taken off of a single tree owned by Mr. S. Webb, of Thornbury.

Also, such fall varieties as Ribston Pippins, Blenheim, Orange, Gravenstein, St. Lawrence, Twenty-ounce, and in fact almost all kinds of apples do remarkably well.

But if there is one kind of fruit in which the valley excels in more than another, it is the plum. This might be called the home of the plum. All of the best varieties that have been tested grow and bear to the greatest perfection, but on account of its early bearing and great productiveness the Lombard is considered the most profitable. Indeed, I have seen growing trees planted four and five years loaded until their branches touched the ground with fine, clean, large well-colored fruit.

Cherries grow as well as plums. but have not been so extensively planted.

Black knot is regarded as a fungous disease. It made its appearance here some years ago, but owing to the prompt and vigorous measures taken by the local municipal councils it has been kept under control and gives very little trouble.

Pears have not received much attention as yet, but some of the hardy varieties, such as the "Flemish Beauty," bear heavy crops of fine, large, clean fruit.

Small fruits of all kinds do remarkably well but are grown principally for home use.

Such varieties of grapes as Niagara, Brighton, Salem, Moore's Early, Moore's Diamond, Concord, Delaware, and others, winter on the trellis.

Peaches have not been grown for market as yet, although there are quite a number of trees scattered throughout the district, and some fine plates of Alexander and Crawford were on the table at the Clarksburg Exhibition this fall. The yield also is good, twenty baskets having been taken from a five-year-old tree in the village of Clarksburg this season.

In conclusion, I would say that the Beaver Valley is progressing rapidly, and in the near future will have an enviable reputation as a fruit-growing centre.

Mr. C. W. HARTMAN, of Clarksburg, who read the papar, added:

There are a few things that I might add to the paper sent by Mr. Mitchell, relative to the Beaver Valley, which has received some attention from fruit growers lately. There may be some persons who intend engaging in fruit growing, and who would like to visit the locality and investigate its advantages for themselves. The most direct way for most people will be to go to Collingwood; everybody knows where Collingwood is situated, it is the most enterprising town, with the exception of Orillia, in the province. It has had its meeting of the Fruit Growers' Association, it also has the largest meat curing establishment in Canada, and possesses a peculiar charm for lady newspaper correspondents in its wealthy, good-natured old bachelor mayor. The Blue mountains are quite close to Collingwood; they are an extension of the Burlington heights, and while Collingwood lies to the east of this range, the Beaver Valley is situated on the west side. Travelling west from Collingwood along the shore of the Georgian Bay for fourteen miles, you come to the town of Thornbury, which is situated at the mouth of the Beaver River, and on the G. T. R., turning to the south as far as the eye can reach is what is known as the Beaver Valley. It extends some twenty-five miles inland and terminates at Eugenia Falls. The tract of land along the course of the Beaver River west of the Blue mountains and east of the high range of hills on the west side of the valley comprises about 300 square miles, most of which is suitable for fruit growing, but some parts are much better adapted for certain fruits than others in the same district. The Beaver River rises in the township of Osprey, near Rob Roy, some thirty miles by winding ways from where it empties into the Georgian Bay. It passes through the busy village of Feversham, supplying the Patrons of Industry with abundant water power for their successful co-operative flour mills, then some five or six miles west it comes to the world-renowned Eugenia Falls, where it drops some 300 feet within the short space of half a mile into the Beaver Valley proper, then on a northerly course between the ranges before mentioned, passing the flourishing villages of Kimberly and Heathcote, it comes to Clarksburg and Thornbury, situated near its mouth, both busy places with large mills and factories supplied with power from this stream. Thirty years ago this valley was almost a virgin forest, but its earliest settlers believed in the possibilities of fruit growing here and planted out many orchards, fortunately the greater part with first-class winter fruit, and for the past few years over 50,000 barrels of winter apples have been shipped out of the valley yearly.

Principal Grant, in his splendid work entitled "Picturesque Canada," on page 574, speaking of the Beaver Valley, says that it is said to possess the finest climate, and to be without exception the finest peach growing district in Canada. I do not know where this information was obtained so long ago, but if it is correct that the further north that fruit of any kind can be grown to perfection the better the quality, then I can endorse the statement of that distinguished writer, and believe that peaches can be raised with profit on a large scale in the Beaver Valley; but I have hadmore experience in other fruits, particularly plums, and from observation, believe that with the same attention, a good plum orchard will be quite as profitable here as the orange groves in southern California.

It has often been asked lately why this particular valley is so well adapted for fruit. Some more experienced fruit grower may be better able to explain, but I imagine that its close proximity to the large sheet of water of the Georgian Bay, and the fact that the valley opens to the north has something to do with its fruit crop and freedom from disease. Possibly the river, fed as it is with springs flowing its entire length, may have a beneficial effect, and the two keep the air cool in the early spring, preventing the fruit buds from opening until all danger of frost is over; the same bracing atmosphere may prevent the fungus affecting the foliage as it does in more southern localities.

Now, although I have no fruit lands of my own to dispose of, I am frequently asked questions about the profits of fruit farming in this district, and the facilities for shipping perishable fruit to market. We have at present the Crand Trunk Railway at the north end of the valley and the Canadian Pacific Railway at the south, some five or six miles from Eugenia. Both of these lines connect with Toronto and Montreal and other good markets in fast time and at reasonable freight rates. It is also more than probable that before long an electric railway will run through the valley, connecting the Georgian Bay with Durham or Mount Forest, thus giving a more direct route to Buffalo, which is always a good market for small fruits. A charter for a railway along a similar route has been granted, but the expense of operating an electric line is much less, and sufficient power is wasted at Eugenia Falls and along the Beaver River to not only operate a railway of that extent, but also to turn every threshing machine, cutting box, churn and sewing machine in the valley, as well as light and heat the houses along the line.

These, Mr. President, are some matters to be considered in connection with fruit growing in the Beaver Valley, that I have strung together on very short notice. With an agreeable climate, good shipping facilities, we only require to develop electricity to a point that it will kill the curculio, destroy black knot, pick and market the fruit, and the happy possessor of the fruit farm will have nothing to do but touch the button.

Mr. Dempsey: I would like to know if pear growing is carried on there?

Mr. Hartman: Not extensively. It has been carried on with some success, and on the higher lands and the heavier soil it does better than in the valley. We suffered some ten years ago with a blight that affected the pears in all parts, and at that time the pear orchards were only set out—not very extensively either,—but the plum is the most profitable fruit that we have raised there yet.

Mr. Fisher: What quantity of plum trees are planted there, and how long have they been planted, and what is your export?

Mr. Hartman: Our export from Thornbury Station alone amounts to a carload every day for about three weeks during the season, in baskets. That is just the plums alone. That is the output of the Beaver Valley.

Mr. Fisher: How many trees are planted and how many in bearing?

Mr. Hartman: I cannot give you the acreage, but there are a great many acres of plum orchards throughout there; I should say there are one hundred acres. Nearly every farmer has half an acre, and some have ten acres. I have sixteen trees that I keep count of, and one year after another they will average $5 a tree profit. I have some 500 altogether.

The Secretary: What struck me on my visit there was the peculiar adaptation of the climate and soil of that valley to fruit and especially to plum growing. I never saw them succeed any better, not even in the Niagara district.

Mr. Fisher: Plum trees will stand 200 on an acre, and $5 a tree means $1,000, which is better than grapes.

Mr. Hartman; Those are sixteen trees that I have given special care to, and under the most favorable circumstances.

Delegate: What is the variety?

Mr. Hartman: There is the Washington and the Imperial Gage, which is a shy bearer. There is also a large plum, almost as large as the Washington, I don't know the name. Then we have the Victoria and the Lombard.

Mr. Orr: Does the Georgian Bay freeze over?

Mr. Hartman: Yes.

Mr. Orr: Did you ever try the Yellow Egg?

Mr. Hartman: Yes; and they do well.

Mr. Pettit: Where is your chief market?

Mr. Hartman: We ship to Toronto principally.

Mr. Pettit: When you speak of carloads do you mean full cars?

Mr. Hartman: I mean all they can put into the express car; they don't have a special car. I got that information from the express agent.

Mr. James: What is the land worth in that valley?

Mr. Hartman: It varies from $30 to $50 an acre.

A Delegate: What do you find the best variety?

Mr. Hartman: The Lombard is the most profitable we have had.

Mr. Caston: I find they are growing the German Prune a good deal?

Mr. Hartman: Yes; the last few years.

Mr. Caston: It is fairly good for canning too?

Mr. Hartman: Yes; we have them shipped as far as British Columbia.

Mr. Caston: Do you have grapes?

Mr. Hartman: Yes; Niagaras. The grapes are not grown there for export at all.

Mr. McNeill: Do they stand on the trellis during the winter?

Mr. Hartman: Yes; I have covered some, but the last few years I let them stand up. Of course the Concord is all right.

Hon. C. Drury: Mr. Gaymon, a lawyer in Collingwood, succeeded in raising a hardy peach tree. I was at that time director for this district on this Board, and I reported the fact to the Association. I think he honored me by giving it my name, and I have strong suspicions that that had something to do with the fact that it has, I believe, become extinct. (Laughter.) But I have been told, and learned from various sources, that peaches will grow in the neighborhood of Collingwood. (A voice,—"Yes, that is true.") If that is true it is a fact that ought to be noted, especially as you are considering the Beaver Valley.

Mr. Hartman: We have had considerable experience in a small way in peach growing. The Early Crawford ripens very well. The next year after that severe winter that we had some ten years ago, we had no peaches; the next year some of them were killed; but we had some peaches from the village of Clarksburg, exhibited at the World's Fair last year. This year there were twenty baskets of ripe fruit taken off one tree, and the tree is quite healthy; and I believe there are protected parts on the Beaver Valley where peach growing can be done to considerable advantage and profit. I think the Early Crawford peach can do very well there.

Mr. Smith: Do I understand you to say there were twenty baskets of Crawfords off one tree?

Mr. Hartman: Off one tree; the baskets were plum baskets.

Mr. Smith: I think our Niagara growers will have to take a back seat.

Mr. Hartman: I am not giving that as an average, but as just one sample.

Mr. W. G. Andrews, foreman for Dr. Aylesworth, said: In regard to the peach growing, you can rely on the reports Mr. Hartman gave. We grow peaches there to great perfection. Our next neighbor, Mr. Cox, has now seven fine trees bearing peaches every year, and we have been growing them this last three years from some two hundred small trees. Some of them are dead on account of the wet ground there, but the peaches can be raised there of the very best quality and with very little care. There is very great difference in the climate within a very few miles. Wehave a farm only five miles out of Collingwood, and during all the winter long the thermometer would vary 10 degrees between our place and the village of Collingwood; and it is the same thing in Beaver Valley and the village of Thornbury. We grow pears to great advantage. Some Flemish Beauty we have had weigh 16 ounces. These large apples Dr. Aylesworth speaks of; I sorted out twelve Northern Spys weighing from nineteen and a half to nineteen and three-quarters ounces apiece. We have some six or seven hundred large apple trees that we expect this coming year 1,200 to 1,500 barrels of apples from. One great difficulty we find is the taking care of the fruit after it leaves our hands in shipping it. This year we shipped our apples to Winnipeg, and we had them graded into three grades and put up very nicely, but some of the best we put up were some of the worst when they got there on account of the rough handling in the transhipping at Owen Sound and Port Arthur. Barrels on the car and some times on the boat are piled up three tier high on end, and at other times piled on their side, and they are broken down; they pull down the bottom barrel and let the others come down with a crash, and the apples are damaged from one end of the barrel to the other; that is our great trouble.

Mr. McNeill: I think one of the most important questions that can come up is the handling of fruit, and I believe the best results will not be got unless by some concerted action. I believe that the transportation companies are only too anxious if they are backed up by the fruit growers to see that this fruit is properly handled. I have followed my own consignments of fruit, and I find the transportation company is perfectly willing to rectify any evils in shipping that can be traced directly to their men, and the express companies have reimbursed me, and through me my customers, for rough handling simply. I have now two cases pending of rough handling. I make a point to investigate every case, and let the companies know that if there is any rough handling or any baskets tampered with, they are just as certain to be followed by me as they are by death. I secured the discharge of one messenger from the Canadian Express Company simply for rough handling. We were in a great hurry, and I found him standing at the door of the car, and throwing grapes in across the full length of the car. I remonstrated with him, and he said, "You don't know anything about it." I said, "You will know more about it before I get through with you"—so I took the job out of his hands, and he attempted to put his hands on me, and he called the agent, who, seeing I was in earnest, let me pile that car myself. I made a complaint to the officers of the company, and I had the satisfaction of knowing that that messenger was discharged. We are to blame ourselves to a large extent. I think that both express and railway men should help us in this matter. Goods sent by express go to their destination worse than goods sent by freight, and boat men apparently are worse than every other, as far as my experience goes. My suggestion is that, as far as this association can possibly do it, we should instruct shippers of fruit to follow every consignment, and follow any destruction by rough handling with letters and inquiries and investigations until they make it so tiresome for those messengers and the deck hands and others who handle this that the companies will employ none but careful men.

Mr. Andrews: We find that the fruit gets a great deal more rough handling in shipping west than in shipping east. The Canadian Pacific Railway, seem to have had all their own way in goods going to the west, and it is a very hard matter to do anything at all with them. There is competition eastward, and hence less trouble.

The President: This question of rough handling of fruit is one that has been discussed a great deal in the past and is a very important one, and I don't know but the remedy lies in this way of following it up as vigorously as Mr. McNeill did.

NOTES ON STRAWBERRY GROWING.

W. W. Hilborn, Leamington, said: I am often asked the question "What is the best method of cultivating strawberries?" To answer that question we must know the conditions in which they are to be grown. The strawberry plant requires about the same in all parts of the country. It does not matter where you have the plant, the requirements are about the same. The conditions vary so in the different parts of the country that we have to vary the cultivation to suit the conditions and to get these requirements. It is therefore impossible to give any directions that will be useful in all parts of the country. On general principles the strawberry plant wants a nice, mellow, loose soil with plenty of moisture but not too much water; water not too near the surface. It won't stand wet feet, it being a small plant and with just, I might say, a crown and some fibrous roots and small top which is easily affected by the changes of the weather. Even although we have favorable weather previously, a few dry days at ripening time will lessen the crop one-half and sometimes more; so that what we want to get at is to regulate the moisture. We may have never so good a soil, give the plant all the manures, commercial or otherwise, that we have a mind to, but if we cannot regulate the moisture our crop will be a failure or a partial failure. The strawberry is made of about 80 per cent. of water. The plan I usually adopt for cultivating is to plant in rows four feet apart and about a foot to one and a half or two feet apart in the row acccording to the variety. Some varieties grow stronger than others. I plant as early in the spring as possible. If the soil is a clay loam, it should be prepared in the fall by plowing and throwing up to the atmosphere. If it is a sandy loam it would require to be plowed and worked in the spring and thoroughly prepared. I plant by using a spade. In the first place mark off in rows with a corn marker four feet apart, and have one man to set down the spade and give it a pry one side, and a man follow and put in the plants, pressing the soil very firmly, having the top of the plant to come about level with the surface of the soil.

Mr. BOULTER: You prefer that plan to putting it in by hand?

Mr. HILBORN: It is putting it in by hand. You make only an opening by spade and put the plant in, and press it in firmly with your hands. If the weather is right, if you have just nice growing season right through, it might answer to use spuds to press the earth, but if it is not right it won't answer. Many of the plants may not show failure for a month, but during the season they will fail. I open the place with a spade so as to admit the roots to go straight down and spread out in fan shape as you go down, and press it with the fingers, and press it so firm that you could jerk off a leaf without moving the plant; then they will come through all right. After planting we start cultivating at once. There's where one great mistake is made with most cultivators. After the plant is in they think the job is done for some time, and perhaps when they come back again they find the weeds up some two or three inches high. It is not right. As soon as the weeds sprout is the time to kill them. One half the work at that time will be more good than double will later on. If the season should be dry this cultivation is a very important matter and should not be lost sight of. Many people think that when the weeds do not grow cultivation is not necessary. If there is plenty of rain to keep the plants growing, and there are no weeds growing, then the cultivation is not a serious matter; but if there are weeds growing or if the weather is dry, it is a consideration. We can keep moisture in the driest season if we manage the cultivation properly, and I think that that cultivation is the most important point to watch in the growing of fruits. Now, during the last few years we have been troubled, especially in our section, with drouth during most of the summer. Well, if we neglect this cultivation in the early part of the summer, all the extra cultivation that we can give later on won't make up for it. We must hold the moisture while we have got it, for the weather is very dry and hot and of course the evaporation is going on very rapidly. Well, if it is allowed to form a crust only for three or four days, the evaporation comes to the top and of course escapes. The dryer the weather the oftener we should cultivate, even to every other day or at least twice a week for small stuff. That gives us a loose mulch top soil and presents evaporation. Cultivation cools off the soil and causes dews to be deposited at night down into the soil and gives us moisture in that way. A very good plan is to cultivate in the morning before that moisture has evaporated again. You will save a little in that way. Now that we have got the plant started to grow, I always cut off all blossoms and all runners of the newly set plants. If the plant has grown sufficient to send out about four or five runners at once then I let them go in the form of a matted row. We all know that in planting a row of strawberries sometimes runners will run out this way and sometimes another way—sometimes ahead and sometimes back By watching that we can have all the runners go the one way, and it makes quite a difference afterwards and in the appearance of the rows Every plant in is a sort of runners hape. The runner runs out here, sends out another runner and goes on. From this side from which the runner starts out, that side of the plant will always send out the runners for the following season, or when it begins to grow as the case may be, and in planting put them in on that side and your runners will always run on that side and it will save you a great deal of trouble. It does not disturb the plant and it grows much better. I have found it is better to keep the row rather narrow in most soils; in cultivating keep it down to perhaps a foot in width.

Mr. BOULTER: That is pretty narrow.

Mr. HILBORN: It is pretty narrow, but if the soil is good it is all right.

Mr. BOULTER: And four feet apart?

Mr. HILBORN: Four feet apart. When you come to pick you will find there is just barely room for the pickers to get in there without tramping the vines; but if you have it wider and it should be a wet season the berries get very soft and I don't know that you get any more fruit, because by mussing the vines in picking you injure them, so that they don't perfect nearly all the fruit that sets; while if it is narrow the plants are not injured so much and they are brought to better perfection, and I think yoe get more for it of better quality and certainly more firm, which is quite a consideration in strawberries. In the fall as soon as the ground freezes two or three inches deep we like to mulch them with any coarse material, coarse straw or anything that we can get that will not lay down too compactly, and put most of the mulch between the rows, but very little directly over the plant, just enough to barely cover them from sight. It is safer on general principles to mulch, although in our locality we find sometimes that those that are not mulched give out just as well as those that are. I usually recommended a renewal system. Plant one spring; take off the crop the following, and where you have planted on land take off perhaps a catch crop the second year; but plant your new plantation for spring and depend upon that.

Mr. BOULTER: It is the safest.

Mr. HILBORN: It is the safest, and I have found in our high, dry, sandy soil that especially when we have those dry seasons and old bed that has been out perhaps two or three years will give a better yield of fruit than a new plantation that you have taken the greatest care of.

Mr. BOULTER: I know that from experience. I paid a man $1,000 for what strawberries he brought me off three acres in the second year, and he didn't put an hour's cultivation on them, but he just happened to strike the right year; however, that is not good policy to follow out.

Mr. HILBORN: No, but there are cases of that kind. Among the many varieties I have tested I have selected about a dozen that seem to stand at the head just now; but I might say that it is very hard to come down to varieties, because what will do well with me or my cultivation may not answer so well with my neighbor not three miles away from me. But there is this one thing that might be borne in mind, and one that will go to show the value of our experiment stations—there are hundreds of varieties of plants sent out throughout the country, and I will say that I myself have tested about two hundred varieties of strawberries—we can get these varieties together at these stations, and test them and simmer them down to a few or to a dozen varieties; then that few we can have more generally tested throughout the country at very little expense, and we can safely pick out these few and say: Those have sufficient merit to give them a trial, while the balance of this hundred or two hundred varieties would not be worth testing in a general way. Well, I have simmered them down to about this: Bubach No. 5, Crescent, Wilson, Williams, Beder Wood, Woolverton, Saunders, Lovett, Parker Earl, Captain Jack, Gov. Hoard, Warfield No. 2.

A Delegate: Is that in their order of quality?

Mr. Hilborn: That is about in their order of value.

Mr. Boulter: Why do you put Crescent second?—because it is large, luscious looking, better yield? Does it bring the money?

Mr. Hilborn: Because in most parts of the country the Crescent will yield $2 worth of fruit to one of Wilson. In my own place I would rather plant the Wilson by far in preference.

Mr. Caston: Don't you find the Bubach makes very few plants?

Mr. Hilborn: Not with me; it makes sufficient plants. The Wilson makes a good fertilizer for the Bubach or the Crescent. In gathering, the berries should be gathered separately. We plant usually either two rows to fertilize with, or four rows. Of the pistillate variety we usually put in four rows, and two rows of some staminate to fertilize it, and generally we get the best yields from the pistillate variety.

Mr. Caston: What one did you put after Wilson?

Mr. Hilborn: Williams, I think, but it varies a good deal and I am not sure that it will stay there. Anything that I give you this year I wish to be allowed to change another year or at any future time in regard to varieties, because it seems impossible to find varieties that remain constant. They will exhibit some weakness in a year or two that we have not seen before.

Mr. Caston: What do you think of the Woolverton?

Mr. Hilborn: The Woolverton has succeeded very well with me. It is very large, fine quality, and firm for such a large berry, and certainly of the finest appearance of any of the large berries.

Mr. Caston: Is it going to be firm enough for shipping?

Mr. Hilborn: I think so. It will ship to quite a distance, I think as far as any of the large berries.

Prof. Hutt: What do you think of fall planting?

Mr. Hilborn: I would not recommend it at all; not that it cannot be done, but nine times out of ten it will prove a failure to the plant, for the reason that the strawberry is such a small plant that if we don't have a favorable season it does not get sufficient hold to stand the winter; it is easily heaved out and there is nothing gained by it. Except you wanted to cultivate a new variety it does not pay to fall plant If you plant in the fall under ordinary circumstances, you have, we will say, half as much cultivation to put on that plantation as you would if you planted in the spring, or one-third as much at any rate, and the following spring under ordinary circumstances you get but a very small return of fruit, and if the plants are not mulched they won't amount to much because they are just a narrow, small row—they haven't spread out enough to amount to anything and you cannot expect much fruit from them, because the plants are not there to produce it. The plants are liable to heave out, and if they do, there is all that labor and you get no cultivation; whereas if you plant in the spring you get a fall crop the following season, and not so much difference in cost as the difference in profit would warrant.

A Delegate: What cultivation would you give it the second year?

Mr. Hilborn: That would just depend. It sometimes happens that a plantation is in such a condition the second year that you can give them the kind of cultivation you would like to, and you have got to vary that to suit. Sometimes I found it was best after the first crop was picked, if they had been mulched, to take off the mulch—either to burn it or rake it off—and then plow between the rows after laying down the tops; but if the weather is very dry and hot and the soil dried out, that is not a very good treatment. Work it both ways with a harrow and tear out all the plants you can; but if the weather is dry you cannot give them that treatment. Sometimes you have to let them go for some time until you get a rain, and you must watch the weather, and if it is a little late in the season I would not advise the plow—I would just go in with the cultivator and work up the soil the best I could with that, and even clean out with the hand-hoe or whatever way you can do it most quickly and cheapest.

A Delegate: Do you ever give a cultivation in the spring?

Mr. Hilborn: I do sometimes. In case I don't mulch I start the cultivator as soon as the weather is suitable in the spring, and on our light soils in dry seasons I think you can keep up the moisture even better that way than you can with the mulch.

Mr. Caston: Cultivate right up to fruiting time?

Mr. Hilborn: Right up to fruiting time.

Mr. Turner: When you are fixing up the beds the second year, don't you consider the plants you leave in are in the same condition as a fall-planted bed?

Mr. Hilborn: Yes, but new plants certainly give the best results, and in cutting out, where you can do it, if the plant runs sufficiently, I would leave the new row where the new plants are and cut out where the old plants come as near as you can.

Mr. Turner: Then why wouldn't fall-planted plants do?

Mr. Hilborn: I wouldn't recommend fall planting, because you cannot get a stand of plants sufficient for a crop the following spring. It can be done on a small scale, and for family use I would recommend it every time if a man has no strawberries, by all means to plant in the fall rather than to wait for another year.

Mr. Caston: I always recommend that if we can get sufficient moisture in September, to plant by all means in the fall.

Mr. Hilborn: What do you gain by it?

Mr. Caston: The plants are farther ahead for the next season.

Mr. Hilborn: We can get all the matted row we require in the next season.

A Delegate: If you get a good season, you get a better rooting by planting in the fall.

Mr. Hilborn: There may be conditions where that's right.

AFTERNOON SESSION.

The Secretary moved that there are so many papers coming on that the paper by Mr. E. B. Edwards, of Peterborough, on "Co-operative Apple Growing" be taken as read and published in the proceedings. This motion was seconded by Mr. Morton and carried.

CO-OPERATIVE APPLE GROWING.

I advocate the extension to apple-growing of the principle of co-operation, which has already been found of so great advantage in other branches, and more especially, so far as farmers are concerned, in the matter of cheese-making. This co-operation may be on a small or on a large scale. It may be only the friendly union of two or three farmers in a neighborhood, or it may include a township or a whole county, and it may apply to those who have only small orchards as well, or perhaps even better than to those who have large ones, for the latter are generally better able to take care of themselves.

1. Co-operation may well begin with the gaining of knowledge on the subject. The two or three may make it a point to compare notes and exchange ideas and information, and the larger body may hold meetings and secure the presence of those who are able to impart instruction, with regard to the kinds of apples to grow, the best modes of growing them, and the best modes of disposing of them.

2. As a second step co-operation in buying trees for planting will secure the advantage not only of lower prices by ordering in larger quantities, but also of greater attention to the order, the prevention of the petty frauds of the tree peddler and greater satisfaction in every way. If I want fifty trees and two of my neighbors want twenty-five each, each of us will gain by sending in an order for one hundred trees at the lower rates that are offered for that quantity. This is an obvious and immediate advantage affecting the pocket, and is one that is within the reach of a small number who may choose to unite, as well as of a larger number.

3. When the orchard is in bearing there may with advantage be co-operation in such a matter as spraying, where the size of the individual orchard does not seem to warrant the providing by each one or a proper spraying pump. Two or three armers in a neighborhood may purchase a pump and provide the materials between them, or a larger number may arrange with a man who owns an outfit to make a round of their neighborhood at the proper times. Many a farmer neglects to spray his orchard, because he thinks it hardly worth while to get a pump for himself, or because at a busy time he does not want to be bothered with something that he knows very little about.

4. When the apples come to be picked and marketed there is not only a fresh advantage to be gained from co-operation in marketing them, but there is a summing up of all the advantages already gained, the test and realization of the work of the earlier years. The knowledge and information gained, the prudent selection of varieties suitable to the locality and suitable for the market, the care in training the trees from the first year upward, the spraying, the tilling. and manuring of the ground, are all telling upon the crop produced. If the kinds of apples have been carefully and judiciously selected to begin with, the co-operating neighborhood will become known for certain good varieties of shipping apples. If the trees and the ground have been properly cared for and the trees have been properly sprayed, it will also become known for the quality of the fruit produced. Buyers will be attracted to such a neighborhood and if an immediate sale be made to them better prices will be obtained on account of the uniformity and quality of the fruit, and that without any combination to keep up prices. Or, if a shipment to the English or other market be determined upon, the advantage of co-operation becomes even more apparent. The man who has only an acre or two of orchard has not a sufficient quantity to ship by himself. By uniting their forces two or three, or a larger number, may make up a carload or a larger quantity, and thus secure the advantage of the greatly reduced rates applicable to the larger shipment. Having a larger quantity, too, there is an advantage in dealing with the commission agent and the better knowledge of the market.

5. For windfalls and fallen fruit co-operation may secure a joint evaporator. This is a matter of great importance, not only to provide a proper means of disposing of this class of fruit, but also to avoid the unwise course of glutting the market with poor and decaying apples, which disappoint both seller and buyer. This evaporator may be either on a large scale in a town or village, or may be a smaller one for a smaller neighborhood.

To sum up, I recommend the formation of county societies to bring together all those who are interested in the subject at stated intervals, and to hold meetings for discussion and gathering information, and to work together as far as possible in the directions indicated. In addition to this the apple-growers in a locality, even if they be only few in number, ought to be in touch the one with the other, and assist one another in such matters as spraying and the like wherever necessary. My ideal would be to see ten, twenty or fifty farmers in a neighborhood meet together and form a "co-operative society," each one agreeing to plant within the next five years ten acres of orchard, the varieties to be few in number and all suited for shipment, to properly study and carry out the care of their trees, and when the time should come for fruit bearing to unite in sending their apples forward under their own brand to the English market, having their evaporator for the windfalls, and if necessary their central frost and heat-proof storehouse at the central shipping point.

FERTILIZATION OF FLOWERS IN ORCHARDS AND VINEYARDS.

The PRESIDENT: I will now call upon Prof. Beach, horticulturist of the Geneva Experiment Station, New York.

Prof. BEACH said: I am happy to bring you greetings from our Experiment Station. We know something of your work at Ottawa, and in the United States Prof. Craig has an enviable reputation as being eminently qualified for the position he occupies. We also know something of your work through the excellent publication edited by your secretary, "The Canadian Horticulturist." It comes regularly to our table and keeps us regularly informed as to the lines of work that you are engaged in. In the line of economic entomology we feel that we get almost as much good in the United States out of the work of your "Canadian Entomologist" as you do yourselves. And then as to your own personal work, I had the pleasure of seeing in Chicago the magnificent exhibit which you made of apples there in the fall—an exhibit which, if I remember correctly, not only filled all space which was allotted to you but also overflowed into that which should have been occupied by the North-West Territories, and it was indeed a magnificent exhibit—one that you may well be proud of.

It is a mattter of common observation among fruit growers that certain varieties of orchard and vineyard fruits show a remarkable difference in productiveness in different locations without sufficient apparent reasons for such a difference. I have in mind an apple orchard, fifty or more acres in extent, set chiefly to blocks of Baldwin and Greening, each block containing but a single variety in the main part of the orchard, but mingled somewhat with other varieties in one section. The orchard has been set about twenty-five years and has been a disappointment to its owners because, although it usually bears some fruit each year, it has produced but three or four good crops in all its history. In the section where varieties are mingled with the Baldwins they have borne much more satisfactorily than have either the Baldwins or Greenings where they stand in blocks alone. The trees around the edge are thriftier and bear better than they do in the central portion of the orchard. In fact, the central portion of the orchard has never yet produced a good crop of fruit.

The owners think the trouble may be due to a combination of causes. The trees are planted but thirty feet apart which is too close for mature trees The soil the in central portion is thought to be naturally inferior to the scil in other sections. Hordes of insects have devastated some portions of the orchard and fungous deseases have not been wanting. While the orchard is not being impoverished by taking from it farm crops neither is it being manured nor cultivated. So far as spraying or pruning is concerned it receives much better treatment than most of the orchards in New York state. There seems to be good reason for believing that the trees are suffering from lack of nourishment due to crowding them too closely together on land not in a high state of fertility; to loss of foliage from insect pests and fungous diseases; to a lack of fertilizers, and to absence of cultivation. But there is no difference in treatment of different portions of the orchard so far as pruning, spraying, cultivation and fertilization of soil are concerned, and therefore the causes enumerated do not seem sufficient to satisfactorily account for the unproductiveness of varieties in certain sections while the same varieties in other portions of the orchard are comparatively productive. The unfruitful portions consist of separate blocks of Baldwins and Greenings unmixed with other varieties, and some have thought that possibly on account of this isolation of each variety the blossoms failed to set fruit.

A similar idea with regard to certain cultivated varieties of the native plum has long been entertained by some growers of that fruit in the Mississippi valley and other portions of the Great Central Plain. This idea is founded on observations that varieties such as Wild Goose and Miner set but little fruit when standing alone, although they blossom abundantly, while they are more productive when standing near other varieties from which their flowers may be assisted to set fruit.

Prof. Goff has shown* that with some kinds of native plums failure to set fruit may be partly due to imperfections in the flowers which render them incapable of set-

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*Flowering and Fertilization of the Native Plum, *Garden and Forest*, vol. vii, 1894, pp. 262,-263.

ting fruit, but this does not account for those instances where a tree that was formerly barren becomes fruitful when another variety is planted near it. In such cases it appears that the flowers are capable of setting fruit, although they are incapable of setting fruit of themselves.

Some horticulturists have for many years believed that a similar condition of affairs also exists with certain cultivated grapes, especially with some of the hybrid varieties. Within the last three years I have been able to demonstrate that this belief is, in many instances, well founded. Mr. M. B. Waite of the U. S. Division of Vegetable Pathology, began a similar line of investigations in 1891 which resulted in showing that many varieties of pears, including some of the standard sorts, are incapable of setting fruit of themselves, a condition, so far as I am aware, that was wholly unsuspected by either practical or scientific horticulturists.

It appears, then, that in considering the unfruitfulness of grapes and pears a new factor must be taken into account, since it has been shown that a failure to fruit may sometimes be the result of the inability of the blossoms to set fruit of themselves. We have also seen that there is some reason for believing that this cause of unfruitfulness is not peculiar to pears and grapes only but that possibly it extends to other varieties of fruits as well. This brings us to the consideration of a subject that is coming more and more to be esteemed of great practical importance to fruit growing, namely, the fertilization of flowers in orchards and vineyards, especially in its relation to the production of fruit.

First it may be well to illustrate, or define briefly, the meaning of a few botanical terms which are convenient to use in a discussion of this subject.

In general the flowers of orchard and garden fruits are what botanists call perfect, that is, they contain both the male and female organs. The male organs produce an abundance of fine yellow powder called pollen. The female organs, called pistils, contain the rudimentary seeds. When the flowers open and the pistils are ready to receive the pollen, the end of the pistil becomes slightly moist and sticky, so that the pollen readily adheres to this portion of the pistil when it comes in contact with it. The pollen grains thus finding lodgment sprout and send out a minute tube which grows down into the central portion of the pistil till it reaches and fertilizes the rudimentary seeds contained therein. This is briefly the process of fertilization as that word is applied to flowers. After being fertilized, the rudimentary seeds begin to develop into seeds and the surrounding portions of the embryo fruit are thereupon incited into growth. On the contrary, if the pistil is not supplied with pollen it soon withers and no fruit is formed. In this connection it is not necessary to consider those unusual cases where fruit is developed without the action of pollen.

As stated before, for many years certain horticulturists have held the opinion that occasionally varieties of grapes were found in cultivation that were more prolific when standing in proximity to another variety that blossomed at the same time than they were when standing alone. In 1891 I planned to investigate this subject the following season and the investigations then begun have been continued every season since that time. As primarily planned the objects of the investigations was to determine if possible :

1. Whether the pistil of the grape flower is pollinated before the blossoms open.
2. Whether any varieties are incapable of setting fruit when supplied only with their own pollen.

Observations* on seventy-seven kinds of grapes, including eight species and their hybrids and crosses, showed that in every instance self-pollination occurred, so that with these varieties, at least, failure to set fruit could not be attributed to lack of pollination. Twenty-one of these seventy-seven kinds of grapes cannot fruit when supplied with none but their own pollen while they are able to set fruit when planted near other varieties that blossom with them. With these varieties failure to fruit must result when they are set by themselves out of the reach of pollen from other vines.

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*Beach, S. A. The Self-Pollination of the Grape, *Garden and Forest* V., 1892, pp. 451-452 ; also, Annual Report of N. Y. State Experiment Station, Geneva, N. Y., for 1892, pp. 597 to 606.

The second question, namely whether any varieties are incapable of setting fruit when supplied with none but their own pollen is evidently one to be fully decided only by experiment. Investigations concerning this subject were made by covering the blossom clusters with paper bags before the blossoms opened. The bag was slipped over the cluster and the mouth was then drawn together and fastened with a wired label. After the blossoming season had passed, the paper bags in some instances were replaced with bags made of cheese cloth or mosquito netting; in other cases the paper bags were allowed to remain till the fruit was gathered. It is apparent that all outside pollen was excluded from the covered clusters by the paper bags and whatever fruit set within the bags must have been the result of close fertilization, that is to say, the pollen necessary to fertilization of the flower must have been produced either by itself or by some other blossom in the same cluster.

Treated in this manner some varieties were able to fruit perfectly; other varieties failed to develop any fruit whatever, and between these two extremes there was every gradation. In order to present some of the results of these experiments in this paper an attempt has been made to classify the varieties according to their ability to set fruit.

Class I. Grapes which are fully self-fertile are named in the following table. By fully self-fertile is meant that so far as observed not more than three per cent of the blossoms fail to set fruit.

In this and the following tables the character of the stamens when known is indicated as follows: "s" indicates that the stamens are short: "l" that they are long: those intermediate between these two classes are mentioned in a foot note. Where self pollination before the blossom opens has been observed this is indicated by a *. The classification is based wholly on the evidence of my experiments. Further testing is considered necessary to determine the classification of varieties marked with a question mark.

Character of stamens.	Self-pollination.	Name.	Name of parent.	Parentage.
l	*	Ambrosia	Salem	Vin. and Lab.
l	....	Campbell	Triumph	Lab. and vin.
l	....	Croton	Delaware x Chas. de Fontainbleu	Vin. and Bourq. and Lab.
l	*	Delaware		Bourq. and Lab.
l	*	Diamond	Concord x Iona	Lab
l	*	Etta	Elvira	Lab. and vul.
l	*	Herald		Lab. (or Lab. x).
l	....	Janesville		Lab. and vul.
l	*	Lady Washington	Concord x Allen's Hybrid	Lab. and vin.
l	....	Mabel ?	Walter	Lab. and Bourq.
l	....	Mary's Favorite	Delaware x ?	Lab. and Bourq. (and vin ?).
l	....	Metternich	Clinton x Poughkeepsie's Red	Vul. and Lab. and (Bourq.?).
l	..	Monroe		Lab. and ?
l	*	Moore's Early	Concord	Lab.
l	*	Niagara	Concord x Cassady	Lab. x (vin. ?).
l	....	Opal	Lindley	Lab. and vin.
l	*	Poughkeepsie Red	Iona x Delaware or Walter	Lab. and (Bourq. ?).
l	*	Prentiss	Isabella	Lab.
l	*	Profitable	Elvira x Perkins	Lab. and vul.
l	....	Rochester		Lab. (or Lab. x ?).
l	....	Rogers No. 13	Chasselas x Mammoth	Vin. x Lab.
l	....	" 24	Bl. Hamburg x Mammoth	"
l	....	" 32	" "	"
l	*	Rutland		Lab. x (vin. ?).
l	*	Senasqua	Concord x Bl. Prince	Lab x vin.
l	*	Vitis aestivalis		Aest.
l	*	Winchell		Lab.

Total, 27; 100 per cent. with long stamens.

CLASS II. Grapes which are partly self-fertile but still practically capable of fruiting satisfactorily alone are named in the following list:

Character of stamens.	Self-pollination.	Name.	Name of parent.	Parentage.
	*	Agawam, Rog. 15	Bl. Hamburg x Mammoth	Vin. x Lab.
l	....	Alice		Lab.
l	....	Brilliant?	Lindley x Delaware	Lab. and vin. (and Bourq.?).
l	....	Burrows No. 42c	Concord x Jefferson	Lab.
l	*	Catawba		"
l	*	Caywood No. 50		
l	*	Centennial	Eumelan	Lab. and vin.
l	*	Clinton		Vulp.
l	*	Concord		Lab.
l	*	Cottage?	Concord	"
l	....	Diana?	Catawba	"
l	*	Early Market?	Elvira	Lab. and vul.
l	....	Elsinburg		Aest.
l	*	Elvicand	Elvira x Candicans	Cand. and vul. and Lab.
l	*	Elvira	Taylor	Vul. and Lab.
l	*	Empire State	Hartford x Clinton	Vul.p x Lab.
l	....	Golden Grain	Lindley x Del	Lab. and vin. (and Bourq.?).
l	*	Hartford		Lab.
l	*	Highland	Concord x Jura Muscat	Lab. x vin.
l	....	Hopican		Lab. and vin.
l	*	Isabella		Lab.
l	*	Iona	Catawba	"
l	*	Jefferson	Concord x Iona	"
l	....	Jessica		
l	*	Little Blue		Lab. (or Lab. x ?).
l	*	Mills	Muscat Hamburg x Creveling	Vin. and aest.
l	*	Olita	Delaware	(Lab. and Bourq.?)
l	....	Paragon		Lab. (or Lab. x ?).
l	*	Pocklington?	Concord	"
l	....	Rommel	Elvira x Triumph	Lab. and vin. and vul.
l	....	Standard	Delaware	(Lab. and Bourq.?)
?	*	Triumph	Concord x Chasselas Musque	Lab. x vin.
l	....	Ulster?	Catawba x aestivalis	Lab. x aest.
l	*	Vergennes		"
l	*	Worden	Concord	"

Total, 35; character of stamens of Triumph, unknown; otherwise, 100 per cent. long stamens.

CLASS III. Grapes which are partly self-fertile but set fruit unsatisfactorily when alone are named in the following list:

l	*	Adirondack		Lab.
s	*	Amber Queen	Marion x Bl. Hamburg	Vul. x vin.
l	....	August Giant?	Black Hamb. x Marion	Vin. x vul.
s	*	Beagle	Elvira x Ives	Lab. and vul.
l	*	Canada	Clinton x Bl. St. Peters	Vul. x vin.
l	*	Canonicus		Lab. and vul.
l	....	Daisy	Goethe	Lab. and vin.
l	....	Dracut Amber		Lab.
l	*	Duchess	Wh. Concord x Del. or Walter	Lab. and (Bourq. ?).
s	*	Eumelan		(Lab. and vin.?)
l	*	Geneva	Wild Lab. x Mus. Alexa. x Iona	Lab. and vin.
l	*	Nectar	Concord x Delaware	Lab. and (Bourq. ?).
l	....	Noah?	Taylor	Vul. and Lab.
l	....	Perkins		Lab.
l	....	Vitis Arizonica		Arizonica.
s	....	Vitis rupestris		Rupestris.
s	..	Vitis Solonis var. Novo Mexicana		Solonis var N. M.
s	*	Vitis Solonis		Solonis.

Total, 18; $66\frac{2}{3}$ per cent. have long stamens, and 33.3 per cent. short stamens.

Of the 79 varieties of known stamens fruitful to some extent when standing alone, less than 8 per cent. have short stamens, and all these short stamen varieties are included in the list on this page. Three of them are wild vines, and three are cultivated.

CLASS IV. Grapes which are abortive fruit but do not perfect fruit when alone:

Character of stamens.	Self-pollination.	Name.	Name of parent.	Parentage.
s	....	Aminia, Rog. 39	Bl. Hamburg x Mammoth	Vin. x Lab.
s	*	Black Eagle		Lab. x vin.
s	*	Brighton	Concord x Diana Hamburg	Lab. and vin.
s	....	Essex, Rog. 41	Bl. Hamburg x Mammoth	Vin. x Lab.
s	*	Gaertner, Rog. 14	Chasseias x Mammoth	"
2	*	Herbert. " 44	Bl. Hamburg x Mammoth	"
s	*	Massasoit, " 3	Chasselas x Mammoth	"
s	...	Merrimack, " 19	Bl. Hamburg x Mammoth	"
s	*	Requa, " 28	" "	"
s	*	Roger's No. 5	Chasselas x Mammoth	"
s	...	Salem, Rog. 53	Bl. Hamburg x Mammoth	"
?	....	Vitis cinerea		Cinerea.
1	*	Vitis Doaniana		Doaniana.
s	*	Wilder, Rog. 4	Chasselas x Mammoth	Vin. x Lab.

Total, 14; of the thirteen varieties in this list with known stamens, twelve or 92 per cent. have short or recurved stamens; 2 intermediate recurved.

CLASS V. Grapes in which self-pollination had no perceptible influence on the ovary:

Character of stamens.	Self-pollination.	Name.	Name of parent.	Parentage.
1	....	Aledo		
1	....	Amber	Taylor	Vul. and Lab.
s	*	Barry, Rog. 43	Bl. Hamburg x Mammoth	Vin. x Lab.
s	....	Blanco	Elvira x Triumph	Lab. and vin. and vul.
s	*	Burnet	Hartford x Bl. Hamb	Lab. x vin.
s	....	Clevener		Bourq. ?
s	. .	Creveling		Vin. and aest.
1	....	Eaton	Concord	Lab.
s	*	Eldorado	Conc. x Allen's Hybd	Lab. and vin.
2	*	Elvibach	Elvira x Bacchus	Vul. and Lab.
1	....	Faith	Taylor	"
1	*	Hayes	Concord	Lab.
s	*	Hercules	A. Rog. Hybrid	Lab. and vin.
s	....	Jewel	Delaware	(Lab. and Bourq.?)
1	*	Lady	Concord	Lab.
s	*	Lindley, Rog. 9	Chasselas x Mammoth	Vin. x Lab.
s	*	Marion		Vul.
1	*	Maxatawney		Lab.
s	....	Norwood		"
s	....	Red Bird	Lindley x Champion	Lab. and vin.
s	....	Red Eagle	Bl. Eagle	"
s	*	Roscoe	Del. x Martha	Lab. and (Bourq. ?).
s	*	Vitis Champini		Champini.

Total, 23; seven or 30 per cent. of the above list have long stamens, and sixteen or 70 per cent. have short or recurved stamens; 2 recurved.

These lists contain in all the names of one hundred and seventeen grapes, twenty-seven of which are fully self-fertile; thirty-five are partly self-fertile but are able to fruit satisfactorily of themselves; eighteen are partly self-fertile and fruit unsatisfactorily of themselves; fourteen have pollen self-irritant only, and twenty-three show no appreciable development of the ovary as a result of self-fertilization.

For all practical purposes the varieties may be placed in three groups. The first group, including Classes I and II, contains those kinds which are able to fruit satisfactorily when standing alone. Of the one hundred and seventeen varieties mentioned in the preceding lists sixty-two, or a little more than one-half, are able to fruit satisfactorily when standing alone. The character of the stamens has been observed with sixty-one of these self-fertile varieties and in every instance the stamens are long. In this group are found among many others the following well-known kinds: Agawam, Catawba, Clinton, Concord, Delaware, Diamond, Diana, Elvira, Hartford, Isabella, Moore's Early, Niagara, Pocklington and Worden; and also Brilliant, Elvicand, Mills, Triumph and Winchell of the newer kinds.

The second group, identical with Class III in the preceding lists, contains those varieties which are able to set some fruit, but when standing alone yield clusters that are imperfect and unsatisfactory. This group includes among others Beagle, Canada, Duchess and Eumelan.

The third group, including Classes IV and V, contains those varieties which when self-fertilized did not bring a single fruit to perfection. In it are found among other kinds Barry, Black Eagle, Brighton, Eldorado, Massasoit, Merrimack, Lindley, Salem and Wilder. Nearly all the varieties in this and the next preceding group are hybrids, but some are not. It will not do, however, to reason from this that hybrids cannot bear fruit when self-fertilized, because two-thirds of the first group are hybrids. Neither are we prepared to say that all cultivated varieties belonging purely to one species are able to fertilize themselves, since some few varieties that are not commonly thought to be hybrids cannot fruit alone.

Rarely have varieties with short stamens been found that were able to set any fruit of themselves, and even then the clusters were very imperfect. Prof. Munson holds* that in all species of Vitis wild vines having flowers with short recurved stamens are incapable of setting fruit of themselves.

While it would not be well to accept results of observations on but an hundred and seventeen varieties in one locality as conclusive for all varieties and localities yet the observations are on a sufficiently extensive scale to be valuable in indicating what results may be expected from wider observations. They indicate that:

1. Only cultivated varieties of grapes having long stamens may be expected to fruit satisfactorily by themselves.

2. Not all varieties with long stamens are able to fruit satisfactorily by themselves.

3. Varieties having short or recurved stamens, and other self-sterile sorts if grown at all ought to be intermingled with other vines that blossom at the same period.

4. Most of the varieties incapable of setting fruit of themselves are hybrids.

5. Many hybrids are capable of setting fruit satisfactorily of themselves.

6. The failure of grapes to set fruit of themselves, so far as may be determined from these investigations, is not for lack of pollination. Observations have been made on thirty-one of the fifty-five varieties which were noted as setting fruit of themselves unsatisfactorily or not at all and in every instance self-pollination occurred before the blossoms opened.

7. Blossoms which are not incited to develop fruit by the action of their own pollen may fruit satisfactorily when supplied with pollen of some other variety. This is shown not only by experiments where the blossoms of such varieties were hand pollinated with pollen from some other variety, but also by abundant evidence of their fruiting in mixed vineyards where they are exposed to the access of pollen from other varieties. Thus Barry, Eaton, Eldorado, Lindley, Brighton, Black Eagle, Gaertner, Herbert, Merrimack, Salem and Wilder proved in these experiments utterly incapable of perfecting fruit when supplied only with their own pollen, yet they are quite generally valued as amateur varieties and some of them are occasionally planted in commercial vineyards.

The experiments of Mr. Waite with pear flowers have already been referred to. They were undertaken in the spring of 1891 for the purpose of ascertaining the value to pear flowers of insect visitors and the work of that season brought out the fact that the trees experimented with were† divided sharply into two classes, those which would fertilize their own blossoms and those which could not. During the following year he carried on extensive investigations concerning the ability of cultivated pears to set fruit of themselves. These investigations, pursued in widely separated localities, showed that some of the best known and most widely cultivated varieties of pears were wholly or partly incapable of setting fruit of themselves. The limits of this paper will not permit his careful methods to be presented in detail. As a result of his investigations he has prepared the following lists.

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*Beach, S. A. Notes on Self-Pollination of the Grape. Annual report, N. Y. Agricultural Experiment Station, Geneva, N. Y., 1892, p. 604.

†Pollination of Pear Flowers. Bul. 5, U. S. Div. of Vegetable Pathology, Washington, D. C., 1894, p. 20.

Self-fertile varieties: Angouleme, Bosc, Brockworth, Buffum, Diel, Doyenne d'Alencon, Flemish Beauty, Heathcote, Kieffer, Leconte, Manning's Elizabeth, Seckel, Tyson, White Doyenne.

Self-sterile varieties: Anjou, Bartlett, Boussock, Clairgeau, Clapp's Favorite, Columbia, De la Chene, Doyenne Sieulle, Easter, Gansel's Bergamotte, Gray Doyenne, Howell, Jones, Lawrence, Louise Bonne de Jersey, Mount Vernon, Pound, Sheldon, Souvenir du Congres, Superfin, Wilder, Winter Nelis.

Both in Mr. Waite's investigations with pears and in my investigations with grapes it has been shown that although a pistil may be plentifully supplied with pollen from its own blossom yet in self-sterile varieties no fruit is developed as a result of such pollination. In other species of plants similar instances have long been known. In such cases unfruitfulness is not due to a lack of pollen but to a lack of a right kind of pollen. In many observed instances when the pistils of self-sterile plants are supplied with pollen from some other variety of the same species, or even of some nearly related species, fruit is produced.

Another interesting fact is that the pollen which is powerless to incite fruitfulness on flowers of its own variety may be able to fertilize the blossoms of some other variety. I have had currants develop fruit when the pistil was supplied only with gooseberry pollen and vice versa, and pears when supplied only with apple pollen; others have reported that peach blossoms set fruit when supplied only with cherry pollen. These may be considered rather extreme cases and in such instances the resulting fruits are apt to be seedless. More nearly related species, as, for example, the different species of grapes or the different species of gooseberries, produce seeds quite readily when fertilized by each other in this way.

Evidently the fruitfulness of a self-sterile variety may be accounted for by the proximity of a supply of congenial pollen, even though it be produced by a plant not of the same but of some nearly related species, so that, while the production of fruit depends on a supply of congenial pollen, that supply does not always come from blossoms of its own variety but may come from other varieties or even from other species.

From what has been said it ought not to be inferred that in all instances where trees are unfruitful when standing alone the difficulty is due to lack of congenial pollen for fertilizing their blossoms. It would be easy, for example, to show that many varieties of fruit are less productive when standing alone than when mingled with other varieties in a well cultivated orchard, but this does not necessarily prove that the reason for its unfruitfulness when isolated is for lack of proper pollination of its blossoms, for it usually happens that it has much better care in the orchard where it becomes someone's business to look after its welfare than it has when standing alone where it is apt to be somewhat neglected. In making comparisons of this kind all conditions which may influence the fruitfulness of the plant ought to be carefully considered and conclusions drawn only from carefully conducted experiments.

In conclusion let it be stated that this essay is intended simply as a contribution to our knowledge of the fertilization of flowers in orchards and vineyards, a subject concerning which we as yet know very little, but which opens before us a wide field for investigation, and which promises results of very great practical importance to horticulture. It was shown in the introduction to this paper that there are reasons for suspecting that the same conditions may be found with some other kinds of orchard fruit which are known to exist with pears and grapes, namely: That some varieties are unable to set fruit at all, or only imperfectly, when standing alone. Here is suggested a most interesting line of experiments to which it is hoped that horticulturists will soon give the attention it deserves. Since it is true that some varieties of fruits come into favor when grown in mixed plantations but bring loss and disappointment when on the basis of such records they are set in extensive plantations unmixed with other varieties, then, before setting large plantations of a single variety it is the part of wisdom to determine whether or not that variety can fruit satisfactorily of itself.

On the other hand the knowledge that lack of cross pollination in certain instances is sufficient cause for unfruitfulness should not make us hasten to attribute to it all instances of unfruitfulness that have vexed our souls and lightened our purses in years past, making of it a scape-goat which we solemnly send away to the wilderness after laying all our sins of omission and commission on its devoted head. Knowing this as a possible cause of unfruitfulness we should be none the less careful to employ all the other means conducive to the development of vigorous, fruitful plants, which the science and art of horticulture have placed at our command, such as a study of the adaptability of different varieties to different soils and climates ; the cultivation and fertilization of the soil, pruning, thinning the fruit, and spraying for the prevention of fungous diseases or for the destruction of insect pests.

The SECRETARY : I think this is one of the most valuable papers that we shall have to place within our records, and I wish, before we proceed to discuss it, to move a most hearty vote of thanks to our friend Prof. Beach, who has come to us from the New York State Experiment Station, Geneva, to give us this paper. I am very glad indeed that Prof. Craig suggested to me the advisability of asking him to come, and I at once responded, because I had heard Prof. Beach at the Western New York Horticultural Society on subjects allied to the one he has just dealt with.

Mr. BEADLE seconded the motion, which was carried amid applause.

The PRESIDENT tendered the vote of thanks to Prof. Beach, who said it was a pleasure to be here, as he always learned more at such meetings than he brought to them.

The SECRETARY : With regard to the Baldwin apple, have you ever investigated the flower of this apple whether it was self-pollinating or not? In New York State the Baldwin has not been so productive for ten years past as it used to be. They used to recommend a person who wanted to know what to plant, " Plant 99 Baldwins out of 100" ; and when asked about the other hundredth the answer would be, " For the hundredth plant another Baldwin." In the vicinity of Grimsby there are large orchards of Baldwins that have not produced fruit for ten years past, and I would like to know whether this is the difficulty—whether it is a variety that is not self-fertilizing.

Prof. BEACH : I wish I could answer the question, but I cannot. I know some investigations have been made with Baldwins, but not sufficient to enable us to speak with any degree of certainty in regard to them—not enough to be sure that it is the only cause. Of course we know that there are other reasons for inducing unfruitfulness in trees, and in my opinion, throughout Western New York, trees are crowded too closely together for one thing. They set trees about thirty feet apart, and the air cannot circulate ; and they crop the orchards to some farm crop and put them on ground that their fathers before them had taken farm crops from for years and years, and they find that they cannot get the crops off because the land is impoverished. This opens before us one of the widest fields of investigation of any subject which I am acquainted with just now of practical importance to the horticulturist. A man does not like to spend the time to carry on these investigations himself, and I think our experiment stations ought to be equipped with sufficient money and a man who can devote his time to it to carry on just such investigations as that. I do not know of any one that can answer the question.

Mr. PATTISON : I have been very much puzzled with one of the Chickasaw varieties, and that is the Weaver. I had one standing among other plums, that is to say more cultivated varieties, and those trees, while making very fine growth and setting a very heavy blossom, refused to bear. I have thought that the reason was that they needed another of the Chickasaw variety to fertilize those. They don't blossom at the same time as the other plums. Would that account for it?

Prof. BEACH : I am of opinion that that is right. In our orchard we have a number of varieties of the Americana, and the other native species, and they set fruit quite heavily ;

our trees are usually loaded; and yet your experience is one that we are quite apt to have where the trees are alone with some of our native sorts; and I should expect that if you would set with them some native variety that blossoms at the same time they would produce fruit, although I cannot answer with certainty in regard to it. I should expect that plums of the domestic class would be able to fertilize.

Prof. HUTT: What would Prof. Beach recommend to fruit growers who have made the mistake of setting one variety of trees, or planting one variety of vines?

Prof. BEACH: I should first make sure that they needed a supply of pollen—because we have fifty chances out of one hundred that they are all right—but if I was sure they needed a supply of summer pollen, I would graft or bud some other varieties in with them. If your orchards are set all right, you cannot crowd in another row of trees very well, and I don't see any other way out of it except to graft or bud or branch other trees in. The insects will help a great deal in the distribution of pollen.

Prof. HUTT: Wouldn't it be well if fruit growers kept bees? I do not believe there are enough wild bees to effectually fertilize as well as it should be.

Mr. ORR: Is the Vergennes a self-fertilizing grape?

Prof. BEACH: The Vergennes comes in a class that is able to set very satisfactorily, but is not perfectly self-fertilizing, that is to say, a cluster would not have every one maturing, but it would be satisfactory.

Mr. ORR: Can you say what varieties should be planted in the block with that?

Prof. BEACH: Most any other variety that would blossom at the same time, but you would find that Vergennes would set fruit satisfactorily of itself, although it comes into what I call the second class.

Mr. PATTISON: Is it not the case that even where they are self-fertilizing the quality of the fruit is improved by the alternate setting, or setting in close juxtaposition?

Prof. BEACH: Have you had any experience of that kind?

Mr. PATTISON: I have always adopted that plan myself, but I have not had sufficient experience to be certain of it.

Prof. BEACH: I think you better call for expressions of opinion from others in the audience. So far as I know there is no influence of the pollen on the quality of the fruit, if that is what you mean. The only way can be that different varieties set close together might take slightly different materials from the soil, and that they would have a better chance in that way—that is, they could not be so closely crowded for food.

Mr. BEADLE: The experiments made by Mr. Waite to which Prof. Beach referred are well worthy of study, and I presume his report can be easily obtained by writing to our Secretary. There he goes into the matter of how far in the course of his experiments he has thought that the pollen of different varieties of pear affected the size, appearance and perhaps in a certain sense the quality of fruit. They are the first experiments I have seen that throw any light upon that question which has been asked during the last half century. I sent the Secretary Prof. Waite's list of apples and pears so far as he has gone, in which he sets forth how many are self-fertile and how many are not self-fertile. That list was published in the *Horticulturist* last year.

Prof. BEACH: Of course I had that question in mind in examining the fruits where I had done cross fertilizing, and I must confess that in the grapes I never could detect any immediate influence of the pollen on the fruit; but I saw the same pears in Mr. Waite's experiments, and there was a plain difference, which is set forth to some extent by the photographs in the article which Mr. Beadle has referred to, published by the Department: and I may say that not only are the publications of the Department at Washington to be had for the asking, but if any of you care for the bulletins of the Geneva Station, you can doubtless get them by writing to the Director at Geneva, N.Y., and asking to have your name put on the bulletin list.

Mr. WHYTE: Every grape grower should have heard the address this afternoon. It is a thing that has puzzled most people who have plenty of grape vines, to know how it is that they haven't taken a crop of grapes while others have succeeded. I have a Brighton vine that bore a heavy crop with fine large bunches in one place, and another part of the vine it was a thin bunch and a small crop; and it was the same with most of the grapes mentioned by Prof. Beach. I know a man who grows the Agawam in a large bunch of perfectly set fruit. I know another place where the Creveling is grown in the same way, whereas with me the Creveling was a failure, and I know now it was set in a place where it didn't get pollen from other varieties. Another influence is the proper fertilizing of the soil. I have noticed in some varieties they were getting worse and worse all the time. In a garden the next block to my place two or three years ago the owner showed bunches of Brightons about ten inches long and of proportionate width of most beautiful grapes. I never knew anybody else grow such bunches of Brightons, and on going to his garden I found he had fertilized to an enormous extent; he had got an opportunity of getting a large lot of stable manure at a low price and he laid it on thick, and I was satisfied that that was the cause of those large bunches of grapes.

Prof. Beach: I think there is no doubt that that is true. This question of pollination does not explain all failures to set fruit. You will find that plants which are in a good state of vigor are able to set fruit more abundantly; of course, leaving out of the question a state when they are in that active growth of young plants when they are not in bearing; but after you have got them so that they will bear a good crop, then plants that are in a good vigorous condition will, I believe, set fruit more abundantly and give you more of it than plants that are in a weaker condition.

Mr. Whyte: Does the actual fertilization produce pollen in a vine that would not otherwise have the pollen?

Prof. Beach. I don't think it is a question of pollen or not, but I think it is a question of the whole system or being. The value is not in the pollen, but simply that the pollen does not have an effect on its own pistil. Sometimes you will see varieties which seem to naturally set very well, and others which do not set very well; and there is something about the natural tendency of the variety as to whether they will set fruit well or not, and the condition of them, with other causes, will affect the vine or plant. I had a fine Eldorado crop this year, and the buds all fell off before they opened, so that although the Eldorado is not able to set fruit of itself, I could not lay it to that or the lack of pollen even. These veteran horticulturists here that have had years of observation and experience would be able to answer this question better than I. What do you think about that, Dr. Beadle?

Mr. Beadle: I have not experimented with the Brighton grape in that direction; but I have just noticed this change, that there are years when the Brighton would seem to set its fruit much more perfectly than in other seasons. I suppose I have taken it from what I have read more than from any personal observations—you know that a busy person in cultivating season cannot carry out experiments of this nicety very well—but I had supposed that the most of the trouble with the Brighton is with the stamens: they do not rise up and become erect, but they are re-curved, consequently the pollen cannot get on to the pistils unless some insects happen to carry it there. I have noticed that in some seasons my Brighton grape vines would set their fruit better than in other seasons, whatever the cause may be. It may have been that the plant was in such vigorous condition that the stamen would stand upright and allow the pollen to reach the pistils.

PLUM GROWING ON THE SOUTH SHORE OF THE GEORGIAN BAY.

The Secretary read the following paper by Dr. Aylesworth, of Collingwood, on the above subject.

It was a surprise to me when I received a letter from your secretary asking me to read a paper before this meeting of the association, for prior to that time it had never entered my head that I had anything to communicate that would interest such veteran fruit growers as many of you are. He suggested as my subject, "Plum Growing on the South Shore of Georgian Bay," overlooking the facts that this shore extends, including inlets, at least 100 miles and that my parish is not co-extensive. Portions of this shore, such as the Beaver Valley, have already demonstrated their adaptability to the growth of apples and plums and I have no doubt the whole southern coast-line is so adapted. But my personal experience and knowledge is confined to the neighborhood of Collingwood which is near the eastern extremity of this shore line, and as I wish any information I may be able to give to be reliable, I will confine my remarks to its neighborhood, say a radius of from five to fifteen miles, of the town.

Twenty years ago I settled in Collingwood, and my father, who was already a resident, immediately began pointing out the high character and quality of the fruit that was being grown. The quantity of this fruit, however, was so small, that what fruit was consumed by those who did not grow it themselves had to be imported. These conditions resulted in my planting the first commercial orchard in that section, consisting of 50 pears, 600 plums and 1,000 apple trees. I had the usual experience of pioneers and saw many and heard of more wise heads wagging at my rashness.

The full information so freely given, and so widely distributed in the earlier reports of this association, saved me many mistakes which I would have otherwise added to those I did make. And I would like to express here the high appreciation I have of the work done in developing fruit culture in Ontario by this association. Some six or seven years after planting I had a large crop of plums, and the fabulous stories of my profits (the largest I heard of being $9,000 for the season) caused the wagging heads of the wiseacres to take a different direction and induced many to plant trees; until now there are a number of orchards as large as mine besides many smaller ones. The planting continues with an increasing ratio unto this day, so that the number of trees that will come into bearing each year in the future will be very great.

Within ten years the first carload of apples was shipped from Collingwood and the quantities of plums were very small indeed, if any.

The quantity of apples shipped now by local dealers and growers within the above radius is about 12,000 barrels, while foreign buyers probably take care of about as many more, say 20,000 barrels in all at the least. Local dealers and growers ship about 17,000 baskets of plums, and from stations within the above radius enough more is shipped to make 20,000 baskets. As yet very few pears are shipped; I am, perhaps, the largest individual grower, having 50 trees in full bearing and 200 more just beginning. There are not enough peaches grown for home consumption yet. Neither are there enough grapes and small fruits grown for home consumption unless it be strawberries.

Within ten years the quantities of fruit produced will be quadrupled, or 80,000 barrels of apples and 80,000 baskets of plums, besides indefinite quantities of peaches, pears, apricots and small fruits, for pears are already going to the north shore of the bay and home-grown peaches and apricots have ceased to be a novelty. There is one pear orchard of 700 trees and several peach orchards of 200 trees planted already.

It must be understood that the fruit belt does not cover the whole country for, for the best success, you must plant between the line where the water of Georgian Bay ceases to modify the effects of the high latitude, and the water.

The distance this line extends inland varies much, where the highland or central plateau of Ontario (some places 900 ft. above the bay) comes close to the water this line may be within a mile of the shore, but where lower lands or valleys debouch upon the bay this line retires in places as much as fifteen miles from the shore. I mean by this that there is a strip of fruit land from one to fifteen miles wides adjoining the water, and in length about one hundred miles. This paper is confining itself to the extreme eastern ten miles of this strip.

The conclusions I have reached from my own experience and observation are:

1. That any kind of apple that can be grown anywhere can be grown in this section and brought to a perfection impossible further south. I have from my own orchard filled a barrel full enough to ship with 108 specimens of Northern Spy apple, some of them weighing between 19 and 20 ounces.

Lest this seemingly fabulous story should cause my veracity to be questioned I would point out that if the apples in this barrel had weighed the usual 135 pounds it would have necessitated their averaging 20 ounces. But when the air space is deducted in a barrel of apples of that size they did not average over 18 ounces.

2. Any kind of plum grown any where can be grown here and brought to the greatest perfection.

3. Any of the less tender varieties ot pears grown in Ontario can be grown here to perfection unless it be some of the late winter pears, which will in some years find the season too short to ripen thoroughly. The most of the trees I have planted are of three varieties, Clapp's Favorite, Flemish Beauty and Bartlett. But I have fruited the three that are marked the highest on the list in your last report, the Anjou, Bartlett and Sheldon, and have had not the slightest trouble in perfecting them. I have been competing successfully with the California pears in the Winnipeg market for several years.

4. In the past, want of faith in the climate has prevented the peach from being planted, and most of the fruit produced has been seedlings. But some growers are now planting quite extensively and no doubt in a few years the peach crop of this section will have to be taken account of. I have Early Crawford peaches planted some five years and fruiting three years and have yet to find a twig injured by the climate.

5. Grapes I have no personal experience with, but a reliable friend assures me of the correctness of the list given below from his experience.

We are honored by a special division for grapes in your report known as the Lake Shore division, and my friend objects strongly to the list given, and would substitute the following, all of which he has grown successfully :

Black—Concord, Creveling, Wilder, Worden.

Red—Agawam, Delaware, Brighton, Lindley and Salem.

White—Moore's Diamond, Niagara and Green Mountain.

Grapes can be produced in great profusion, but owing to their being later than those produced south, when ripe the price is very low ; I have no doubt that this has prevented others, as it has myself, from planting for market. But as northern Ontario opens up, our proximity gives grape growing on Georgian Bay a future.

After enquiring diligently among those I knew had devoted most attention to the growth of small fruits I have been unable to learn of any that had had a failure from climatic causes.

The soil varies from a light sand to the heaviest clay, so that the favorite soil of any given fruit can be selected. I firmly believe this fruit belt will rival the Niagara Peninsula as a fruit country in the near future.

Fifteen years ago fruits and fruit trees had no enemies, but now we have nearly all that the more highly civilized regions boast of, but I am fully presuaded that they are not nearly so virulent as in warmer climates. Though the black-knot has been introduced and gained considerable headway, a little energy on the part of the inspectors has caused its diminution instead of its increase, and it now seems quite under control.

Fifteen years ago all kinds of fruits came to market in all kinds of boxes, barrels, baskets and bags. But to-day things are different and I think we will soon equal the best in the care bestowed upon our fruit.

Collingwood as a shipping point for fruit is unrivalled, as the two fleets of steamers with their headquarters there bring to our doors all the north and west where fruit cannot be grown, and the completion of the Parry Sound Ry. will give us direct communication with the whole of northern Ontario and Quebec. So that this section has the greatest advantages on account of its proximity to the best markets of our own country and the western States, while freight rates to England are no more than from southern Ontario.

Remembering our latitude many of the foregoing statements may seem fabulous, nevertheless they are true, and are not only true but are consistent with all the facts known to science concerning climatic conditions and the growth of fruit. Perhaps the most convincing way to put the subject in the few moments at my disposal will be to take a general view of Ontario and New York State. Southern New York, as well as Pennsylvania is mountainous and miles from a large body of water, and there is no intense excitement about its great adaptability to fruit growing in that section. Portions of central New York and along the Hudson excel in this particular. But when you come still further north to Niagara county and its neighborhood you have the eastern paradise of the fruit grower of the northern States. Crossing the line you have the same conditions on the Peninsula between lakes Erie and Ontario.

The fruit regions follow the shores of the lakes, but it is not all the shores of each lake that are thus favored, for just as it is impossible to grow peaches on the north shore of Lake Ontario east of Toronto while its south shore is specially adapted to its production, so it is impossible to grow fruit on the north shore of Georgian Bay while its south shore seems well adapted to it; peaches being grown there with ease though seventy-five miles north of the north shore of Lake Ontario.

Most of this is trite to those who have given it attention, but there is one point never seen or heard mentioned, and as it is a practical one I would like to state it here, the more especially as I know most of you sympathize with my feeling of dissatisfaction, which has been much increased since our successes at the Columbian Exhibition, when I think our neighbors to the south are getting ahead of us in any useful art or calling.

A few moments ago I referred to the extreme adaptability of some portions of central New York to fruit growing, grapes being the chief specialty. The facts are that these favored sections occur on the margins of the smaller lakes with which central New York is studded. And the point I wish to make is that we have a lake very close to us here in Orillia, lake Simcoe, that should afford equal opportunities upon some parts of its shore to produce fine fruits in abundance.

Personally I have no doubt whatever that there are bonanzas in fruit growing around the shores of Lake Simcoe that only await experiment backed by intelligence and enterprise to enrich some men who I sincerely hope will be Canadians. For while glad to receive strangers it seems to me it would be humiliating to have them come in and pick up such plums (literally as well as figuratively) which we have been too stupid to see though living alongside of them all our lives.

PACKING FRUIT FOR EXPORT.

Mr. A. H PETTIT read the report of the committee which had been asked to deal with the recommendations submitted by the Deputy Minister of Agriculture, as follows:

SUGGESTIONS FOR ACT *RE* PACKING FRUIT FOR EXPORT.

1. The name of the variety shall be stamped upon the barrel, and the class whether 1, 2, 3.

2. The classes (No. 1 and 2) shall be uniform throughout the barrel.

3 The packer shall put his name and address on all apples marked No. 1; and on No. 2 apples a brand by which they may be known as such.

4. The grades shall be those laid down in the Dominion Inspection Act, viz:

No. 1 inspected Canadian apples shall consist of well-grown specimens of one variety, of nearly uniform size, of good color, sound, free from scab, worm-holes and bruises, and properly packed.

No. 2 inspected Canadian apples shall consist of specimens of one variety, reasonably free from the defects mentioned in class No. 1, but which, on account of the inequality of size, lack of color, or other defects, could not be included in that class.

6. The size of the apple barrel shall be as follows: length of stave 28 inches; length of head, 16½ to 17 inches as laid down in the Statutes of the Dominion.

Mr. PETTIT moved the adoption of the report.

Mr. BOULTER seconded the adoption of the report.

The SECRETARY: This will be a dead letter until there is an inspector; but when there is an inspector whose business it is to seize and confiscate such fruit as is put up in a fraudulent manner, which is branded No. 1 when the barrels contain No. 2 or No. 3 apples, we shall expect to see some results of the position we are taking. However, I would approve of the report of the committee.

Mr. WHITE: This is a matter in which you ought to go slow. These recommendations ought to be printed and communicated to the members. It is a very serious thing to back out of a thing carried by a meeting. We should defer anything on a report of that kind asking change of legislation.

Mr. PETTIT: This is not a question of legislation at all; that is to come later on.

The SECRETARY: There is nothing in this but what we can heartily agree with.

The motion was carried.

COLD STORAGE IN FRUIT GROWING CENTRES.

Mr. A. H. PETTIT said: I received a copy of the programme but a very short time ago, with my name opposite this subject. I suppose the reason I was asked to deal with this question is that I have been giving the matter some little study, but I have not been able to arrive at the cost or anything to throw any light on that subject, but the point would appear to me like this: We are to-day in this Province of Ontario growing immense quantities of summer fruits. Of course at this cold season of the year it is not a very warm subject to discuss cold storage, but about July, August and September it would be a very pleasant subject to consider. Now, at that season of the year we have immense quantities of fruit as fine, I suppose, as grown in any country in the world. We find our own markets being well supplied at different seasons in the year with summer fruits. Now, why could we not, by establishing in local centres of fruit culture cold warehouses of some kind, make our country one continual summer of our choice summer fruits. The day of experiment I think in that direction is past. It has become an established fact I think, that we can keep almost any variety of our summer fruits over a certain period of time. Even our most perishable fruits might be kept a short time. Now, coming from a peach-growing section, I would illustrate one or two points in it which would be beneficial to our fruit growers. Take the one line of peaches alone, the early Crawfords, which are to-day the most largely grown in our section of the country in the peach line, and at that season of the year we place upon the market very large quantities, and the price is very much lower than that of many peaches of inferior quality simply for that reason. Now, if we can hold that market with cold storage even for a week or ten days, we can make a very large profit indeed. If we like we can hold our apples and summer pears, Bartletts, and those things, till the following summer, and we can have one continual flow of those summer fruits. Now, I do not wish to go too far upon this subject, because I have not had as much experience as someone else; but in the city of Chicago where I spent last summer in charge of the Fruit Department of Ontario, I visited a great many of the cold storage warehouses. In the hot month of May and June, you could go into those warehouses and see thousands of barrels of Canadian apples—Northern Spys—in prime condition bringing splendid prices in that market. Now, I think fruit growers by combining to establish cold storage warehouses and hold their fruit, could realize double what they are receiving to-day by shipping them all within six weeks to all the markets both home and foreign. We could thus make our business more profitable and satisfactory in every respect. Prof. Craig has been conducting experiments this year on the keeping qualities of the different kinds of fruits, and I want to ask him to finish the subject, for I know that he can do it more justice than I can. I believe that this is the great question of the day with sections of the country where fruit growing is engaged in to a large extent. (Hear, hear, and applause.)

The PRESIDENT: Prof. Craig, we would be very glad indeed to hear from you on the same subject.

Prof. Craig: I cannot add very much to what Mr. Pettit has already said. He has addressed you from the grower's standpoint, and I will give you very briefly some results of experiment work which I have conducted along this line during this season. When at Chicago last year, this phase of fruit culture struck me as one of the lines which should be investigated in favor of the fruit grower of Ontario; and as soon as an opportunity occurred this season, when the fruits began to ripen, I made arrangements with a cold storage warehouse in Montreal—one of the best equipped of this kind that I know of—to ship there from time to time samples of our early summer apples. I began with Tetofsky. and continued taking in Duchess, Red Astrachan, Yellow Transparent and Wealthy and Colvert and so on, including a full list of the summer varieties as well as those less perishable of the fall kinds. I also included, just for information, some stone fruits, the early varieties of peaches, plums and pears, and fall pears. It is too soon yet to speak of results, that is their present condition in all cases which I have mentioned; but I can at this point state quite definitely that I have had negative results in some cases which speak for themselves. For instance, in the case of early peaches, Mountain Rose and Early Crawford keep very well for a period of about eighteen days, after being kept in a uniform temperature of 35. Now that, it seems to me, would tide over any difficulty which might arise in the peach season from a glutted market. At the same time our experiments show that this stone fruit cannot be kept even at that temperature for any length of time—a fortnight probably would be a safe outside limit; but our experiments only go this far, and too much weight should not be put on them. With regard to plums, our experience has been practically identical. We have been able to keep them a few days to over two weeks in good condition; after that a kind of deterioration in quality—not exactly a decay—set in, so that while a plum was fairly intact in regard to shape and form and solidity of flesh, it had lost flavor and could not be sold as a plum of good quality. With regard to the early apples I may say that I examined them personally about ten days ago and found the Tetofsky in perfect condition, just as good when put in the cold storage, with the quality as good as you could have it—and as you know it is a very perishable apple which does not usually keep a week when taken from the tree if taken when fully ripe. I put the Tetofsky in about the 28th July, and the others as they ripened afterwards at that time. The Duchess it is needless to say was also in perfect condition, and so were all the other apples. In conducting this experiment I had duplicate packages prepared, in one of which the fruit was wrapped separately in tissue paper, and in the other it was merely packed in a basket without any wrapping. Where there was ever any indication of rotting it was in the package in which the fruit was not wrapped. This was very apparent in the pears. The Bartletts and Flemish Beauties were in perfect condition when I examined them ten days ago, and only to-day I have received a letter from the manager of the Cold Storage Company in which he says, "Having examined all the stock I may say generally that that stock which has been kept in wooden packages, not in baskets, has kept best. For instance the pears in the small barrel marked 'Pettit' are in good shape, while the pears that are in baskets are not in such good condition, about five per cent. of these being wasted. All the apples are in No. 1 condition."

A Delegate: Have you any data as to the cost of cold storage?

Prof. Craig: I don't know how cheap a building could be put up that would answer the requirements of cold storage. I know this one where the experiments are being carried on for me is a very expensive one; the plant in it cost $35,000.

Delegate: It is something worth knowing about this cold storage when Tetofskys run down to 50c. or 40c. a barrel.

Mr. Whyte: Wouldn't it be better to have these cold storage warehouses on the market, say at Toronto and Montreal?

Prof. Craig: I think if the fruit is kept at the right temperature no change takes place, and that when the fruit is taken out it will take the same time in the process of decay as it would originally. I think it will keep just as long as it should after the fruit has been picked before it is thoroughly matured on the tree. It would be an advantage to have the cold storage at the shipping point so that the fruit could be transferred without the possibility of a great change of temperature for any length of time.

Mr. A. H. PETTIT: I had apples on our table at the World's Fair for no less than six weeks after they came out of the cold storage, and that was in a very warm room, under glass you may say' New York State had apples for more than six weeks on their table after coming out of the cold storage. The course we took after taking them out of a temperature of 34 was to put them in a room that is just moderately warm, and there let the evaporation take place and the moisture pass off, and they seemed to keep splendidly. I was always opposed to cold storage on the ground that they would decay more rapidly, but experience tells us that they will not—they will keep exceedingly well if carefully taken out.

Mr. BOULTER: Has this Association any plans of a cold storage whereby any member could get information? I expect to build a cold storage in Toronto next summer and would like to get some information.

The PRESIDENT: I think there have been plans published in the "Horticulturist."

Prof. CRAIG: Not of the kind that we are discussing here.

Mr. BOULTER: I think it would be very beneficial if our "Horticulturist" could print or disseminate plans whereby members of the society could build small storage warehouses in different localities, because I believe that cold storage could be adopted in centres where it seems now almost impossible. I have lost thousands of dollars by not having cold storage for strawberries.

Mr. A. H. PETTIT: The only process I have seen has been a chemical process, and that can be regulated I think very much better than we can any ice storage.

Mr. McNEILL: I have had a little experience in cold storage. I saw the construction of one and lived within thirty feet of it for eight years, and saw the workings of it during that time, in and out of it all the time, closely connected with some business that was going on there. This cold storage room was built by a dealer in butter and eggs and general produce for his own use. It had double walls on the outside with building paper between; two doors on the inside with paper between; and simply scantling, I think it was 2x10, between those. That is all the protection he had. It was not quite sufficient, but still it would keep out frost in the winter during the time he didn't have it with ice in. The building was very strong. It was about 30x50 feet. It was cooled with ice. A very substantial floor was put on it. It was a low cellar, then another chamber above that, and finally the ice up above arranged in a cage properly supported below, so that the ice was three feet from each wall, and there was over one hundred tons of ice placed up there during the winter. There was a strong circulation of air that went down over the sides of the ice. You could feel it and notice it with a candle or any flame. The cold air was constantly falling from above down those sides to the cold storage room below, and that was regulated with openings that you could let in a draft of cold air or you could turn it off That was sufficient to keep the chambers below at the temperature he required, though the temperature was not kept below 40. There were several little practical details, such as the condensation of moisture in the lower room that he had to provide for by a series of zinc plates and so on; but the general principle was that of separating the ice on a frame about three feet from the wall with spaces that could be opened or closed for the cold air to descend to the chamber below, and there was provision made for the warm air coming up, and thus a circulation was kept up. It worked well for his purpose, but of course fruit was not thought of at that time. It was in Windsor.

Mr. HARTMAN: A year ago I read in a paper that somebody had applied for a patent on cold storage and used snow instead of ice. I noticed that in the Blue Mountains, in the clefts of the rock, you find a little snow and very little ice, and I wondered whether snow would be practicable.

Prof. CRAIG: I think we will have to adopt a system that will bring the temperature down to the freezing point, and the sooner we get to that the more perfect will be the condition of the fruit. The basket package is not the form for cold storage. It should be in a box that holds fifty to seventy-five pears, in proportion to their size. In every case the fruit which is put up in packages of that character kept much better and was handled with greater satisfaction and packed better in the storage rooms. In Montreal, in this storage warehouse that I referred to, they have about forty rooms, each 20x30, and those rooms are double-walled, and the square packages, or packages of the parallelogram shape, pack much better in those than in any basket form, and the fruit is much less liable to be damaged.

Mr. WHYTE : I think it would be advisable if our editor would get a proper account of such a building and publish it in the "Horticulturist." We cannot discuss questions of that kind here to any advantage.

Mr. BOULTER : Probably there is nothing of more importance to this society at the present time, and I would suggest that a committee be appointed to get all the information they possibly could in regard to it and have it published in the "Horticulturist." I believe some scheme could be devised that would be feasible in certain localities, and not come at such an unreasonable price as the figures we have had.

The CHAIRMAN (Mr. Wellington) : The secretary will take it in hand and do what he can and publish it in the journal, and probably Prof. Craig will kindly assist him in the matter.

Prof. BEACH : I am acquainted with a gentleman who lives on the Hudson River who has what he calls a cold room constructed very much on the plan of that just described by Mr. McNeill. He uses it for holding back the peaches for a few days—not more than ten days, sometimes not so long as that—and he sorts them out as he wants them and ships them immediately to New York; but he lives so near New York that he can put them on the night-boat and have them there in the morning. I may be wrong in my impression, but I have an impression that the experience of the gentlemen who have had most to do with cold storage in that part of the country is that perishable fruits do not stand up well after they come out of the storage, and for that reason it would be best to have the storage in the market centres.

Prof. CRAIG : What kind of storage?

Prof. BEACH : Any kind, after they have been kept back for a period of time in that cold temperature; we know that frequently they do go down rapidly.

NOTES OF TRAVEL AMONG ONTARIO FRUIT GROWERS.

Prof. H. L HUTT, of the Ontario Agricultural College, Guelph, said : In my account last year at Peterboro', perhaps I pictured rather highly some sights I saw among our American cousins. At any rate some of our members criticized me for booming American orchards and vineyards. Well, I will assure you that if I did so it was not to drive any of our Canadians across the line, but rather to stir us up to better things, to hold that up as an object lesson to us in certain respects that we might profit by it. Consequently, to-day I am on the programme for some notes of travel among Canadian fruit growers. No one is more assured of what we can do in this Ontario of ours than I am. I believe that with such varied climates and conditions we can produce some of the finest fruit and of the best quality and in great quantity. I have had the privilege this summer of travelling considerably over the province. Starting in the Niagara district near the Falls, we have what many of those who live there consider the garden of Ontario. In the vicinity of the Falls you will find acres and acres of large peach orchards and vineyards. It is a treat to anyone who is not used to that sort of thing to see the fine vineyards and orchards in that section. One which I have always enjoyed visiting is the fruit farm of Mr. E. Morden, who is a member of our Association. That is a place where you will see much in little. Mr. Morden is a thorough cultivator, and his fruit farm and nursery of thirty or forty acres is well tilled and filled with fruits of all kinds that can be grown there. Many others might be cited in that same district. It was my privilege also to visit some fine orchards and vineyards in the vicinity of St. Catharines. I went out one afternoon with Mr. Edward McCardle, who has four or five farms in that vicinity. On the Kottmeier farm he has one of the largest peach orchards I have visited. The crop of peaches was enormous, and his vineyards were loaded. Another farm of his known as the Martindale farm, is given entirely to peaches—15 or 20 acres—and at the time of my visit the trees were heavily loaded. Near there we made a visit to Mr. Barnes, who is one of the largest wine makers. At Grimsby we have the great fruit section. Grimsby has an enviable reputation as a fruit centre. It will be impossible for me to speak of all the fruit farms, but I cannot overlook that of our worthy secretary, Mr. Woolverton, who has a farm of 100 acres all in fruit, which is in itself a great experiment station. He has a greater variety of fruit than probably can be found in any one farm. It is one of the places Mr. James spoke of last night as having palatial houses and all the surroundings. Major Allan has a large plum orchard that at the time of our visit was heavily loaded with plums. Collingwood section has plums to a great extent, but in the Niagara district they grow plums that would astonish many of us Around Winona we could not overlook the farm of Murray Pettit, one of our experimenters in grapes. His vineyards, about 30 acres in extent, include some thirty varieties of grapes, and he has quite a lot of pears and plum trees as well. Going a little farther west I might mention the nurseries of E. D. Smith, which are quite extensive, and he has a lot of very fine nursery stock there at the present time. On the farm of Mr. D. Tweedle, next neighbor to Mr. Orr, I found a stock of the finest plum trees I have seen growing even in any of the American nurseries. I should not have forgotten to mention the Fonthill nurseries of Messrs. Morris & Wellington which cover several hundred acres of land; so it is not necessary for Canadians to go out of their own country to get all the nursery stock of good quality that could be desired. At Stony Creek I was much interested in the visit to the fruit farm of Mr. Orr. He believes that what is worth doing is worth well, and we found things there kept in first-class condition. I think he has about 90 acres of land, and 30 of that is in fruit, about 50 acres in vineyard, and 800 or 900 plum trees, 1,000 or 1.200 pear trees. These orchards and vineyards are something that growers in that vicinity may feel proud of. Of course it is almost impossible to do justice to a section like that by mentioning only a few of them, but that is all we have time to speak of at present. Making now a long jump as far as Chatham, I was privileged to visit one of the large orchards owned by Mr. Dolson. He has a very large apple orchard of some 40 acres—some large old trees, fully as large as any we will find in the Grimsby section, not excepting those of Mr. E. J. Woolverton, of which we saw photographs yesterday. Coming into Essex county we have one of the great fruit growing sections. In South Essex we have a great peach section. Mr. Hilborn is right in the centre of that peach growing section. He has about 60 acres of peaches, probably as fine a peach orchard as you would find almost anywhere. He has about 6 acres of strawberries and about 100 different varieties growing. His next neighbor has also 50 acres of a peach orchard, newly set out; so you see in that vicinity they are going extensively into peaches. Their land is admirably adapted for it, and they know it. His neighbor on the other side, Mr. John Mitchell, has another good example of "a little farm well-tilled." Mr. Mitchell has about 25 or 30 acres in fruit, and has probably one of the best-kept fruit farms that we will find anywhere in the province. I spoke last year of the shortening-in method of pruning adopted in some orchards about Geneva by Maxwell Bros. Mr. Mitchell adopts that method of shortening-in the wood every year, so that his trees are compact, symmetrical, close-headed as any we will find in the province. Next neighbor to him we have the large peach orchard of Mr. Tyehurst—over 70 acres of peaches, most of them in bearing, among them a great many of what are spoken of as Tyehurst Seedling. Then in North Essex we have the great grape section. In Walkerville, where Mr. McNeill lives, we have large vineyards. Mr. McNeill has two large vineyards, in all about 50 acres of grape. His next neighbor to him, Mr. Montreuil, has about 30 acres. Then we take as circle, going around up in Huron, where it was my privilege a couple of years ago to visit some orchards. I don't remember anything quite so extensive, but nearly every farmer there has a small orchard of some extent, apples being the principal fruit.

Then coming north into the Beaver Valley, it is needless for me to say anything more than what has been already said. That valley is certainly a great plum-growing section, and we expect to hear more from them along that line. I visited the fruit farm of our friend, Mr. Caston, at Craighurst As we all know, he is an enthusiast in fruit-growing, and if peaches do not succeed in Simcoe it will not be his fault; if they could grow there he would have them. But Mr. Caston is an enthusiastic experimenter, and has given a great deal of attention to growing all the varieties of fruit that can be grown in that section He has already tested a great number of varieties of Russian apples Taking a hurried run across the province down to Trenton, it was my privilege, along with Mr. Woolverton, to visit the Bay of Quinte district, and particularly the orchards of Mr. Dempsey, who has about 40 acres of apples closely planted and in bearing It was a sight to see those orchards along in September. I never saw anything growing like his Snow apples and Ontarios—loaded to the ground. It was a revelation to me as to what they could do in apple growing in that section. Of course that is the great apple section, but I had no idea that they could produce fruit so abundant and of so good a quality as they have in that part. Mr. Dempsey has most of his pears across the Bay of Quinte in Prince Edward county, and I was pleased to notice that much-spoken-of Dempsey pear. I saw the original tree from which all the stock of that variety had been taken. Coming west we visited other orchards near Oshawa and Whitby. I will close by mentioning some things that we should observe if we are to hold our own and keep in the front rank as fruit growers. In the first place I think we must give more attention to the selection of suitable soil for the different varieties which we plant. I received a communication this spring from a grower in the Niagara district, saying that some disease had struck his grapes—that all the grapes in the centre portion of his vineyard were being affected by a disease that acted like black-knot, and it was spreading rapidly, and he was afraid it was going to clear out his whole vineyard. It was my privilege to visit that part not long after, and I found in that vineyard the trouble that is sometimes spoken of as black-knot on grapes. This all occurred at one end of the vineyard, which was in a low piece of ground. That is known not to be a fungous disease at all, but simply an abnormal growth owing to unsuitable conditions. This soil was too low and brought about this abnormal growth on the vines. In putting out trees or vines or plants of any kind we should always look to get them on the best and most suitable soil. Plums and pears we generally give the heaviest soil; grapes we always give well-drained soil. If there is one fruit above another that we can put on a moist soil it would probably be the currant or gooseberry. Peaches of course require the driest and lightest, but peaches on not too heavy soil will do fairly well, and are not so liable to attacks of insects as those on the light soil. Another point I think we do not observe as thoroughly as we might is the arrangement of our trees in orchards. I think we should give more attention to planting trees on the hexagonal plan. Nearly all the orchards we find are planted on the square—a very convenient method—but the hexagonal plan has the great advantage that we can get so many more trees to the acre without crowding than we can on the square. The honey bee makes use of that plan, in building his comb, which is built in hexagonal shape; in that way he can get in so many more cells to the square foot than in any other shape. If we adopt the same plan in our orchards we can get in many more trees to the acre. Taking apple trees 30 feet apart, we could get six more trees to the acre on the hexagonal plan than on the square; taking plum trees 10 feet apart we can get 25 more trees to the acre. This counts up quite a bit when we come to plant an orchard of any size. Then the question of cultivation is one that is often discussed, and I think there is not enough attention paid to it. The majority of our fruit growers do not give proper cultivation. There are too many of our orchards in sod. We cannot keep orchards continually in sod and expect them to do well. Sod should never be allowed in a young orchard. Trees should be cultivated till they come into bearing. Sod should only be allowed in a young orchard where the tree is growing so luxuriantly that there is a tendency to wood rather than fruit. This wood growth can be checked by sodding them down for a couple of years, but as soon as they receive their growth they should be cultivated. I am not in favor of plowing an orchard. If I had my way I would do as I have done for a number of years at home—that is cultivate orchards without plowing at all. In plowing deeply in the orchard, or plowing at all, we disturb the roots more or less, and by keeping up a good system of cultivation by the use of the spring-tooth cultivator and broad share cultivator it is possible to keep the weeds down and never have to have a plow in them from one year's end to the other. Of course where land is so flat that it needs drainage, there is some excuse for plowing. I know Prof. Bailey advocates plowing, in order to stand drouth in the dry season. I believe we should give deep cultivation when we set out the orchards, but I think it is not natural to try and drive the roots down afterwards into the hard subsoil by deep plowing on top. Then the fourth point is we must adopt more effective measures of fighting insects and fungous diseases. We must become more familiar with our minute foes. There are two little books I would like to recommend to all fruit growers. One is "Fungi and Fungicides," by C. M. Weed. It is one of the latest up-to-date publications on the fungi; I think the price of that is $1.25; and another by the same author, "Insects and Insecticides." In these two little books we would get enough for the general run of fruit growers to be thoroughly posted in those minute foes that trouble our fruit plantations. We have that admirable work by Prof. Saunders, "Insects Injurious to Fruits." For descriptions of insects there is probably nothing that will equal that, but that has not been revised since the greater information in regard to spraying has been introduced. Then I think we must give a little more attention to the adoption of preventive measures for fungi. If each county or township which grows peaches or plums would enact and enforce the Black-knot and Peach Yellows By-law we would help to rid our land of these two troublesome diseases. I visited this year quite a number of peach orchards in the Niagara section which were being taken off rapidly with the peach yellows. Now, unless we follow that up and destroy the trees wherever this disease appears, unless we cut off our black-knot wherever we find it, we are not going to be rid of those diseases. I think each township should see that the by-law is enforced by means of inspectors. Then, there is just one other point, and that is, we want more fruit growers to practice thinning of fruit. There are too many of us who allow all the thinning to be done by the insects and by those fungous diseases—and they are not safe hands to leave the job to. Where we carry on spraying as it should be done on trees, we will find they will be fairly well loaded; and where trees are heavily loaded it is always advisable to thin out the fruit when it is small. Any of you who grow fruit for exhibition will understand what this means. That is how we get the fine specimens for fairs. Over-bearing not only injures the quality of the fruit, but it injures the vitality of the tree. It will only bear in alternate years, or probably bear for a few years and then stop altogether. If by thinning out there we thin out a number of seeds, we throw all the energies of the tree into the fewer apples left, and the production of pulp is much less drain on the tree than the production of seeds. So we can increase the apples to almost double the size, and increase the value of the fruit. (Applause.)

QUESTION BUDGET.

The Chairman read the following questions and answers that had been submitted:

1. What are the ingredients and proportions of the Bordeaux mixture? A. 4 lb. lime, 4 lb. copper sulphate, 1 bbl. water.

Prof. Fletcher: Wouldn't it be well to mention that there is another formula: "6 lb. copper sulphate, 4 lb. lime and 22 or 45 gals. of water." This is a stronger mixture.

Prof. Beach: For potatoes the stronger formula is better, but for fruit trees the formula you have given is all right.

2. May the Bordeaux mixture be used on grapes, currants, gooseberries and roses? A. Yes.

3. How often should apple trees be sprayed with Bordeaux mixture, and when? A. First application copper sulphate. One application before blossoming, and three afterwards at intervals of ten days to two weeks.

4. Will Bordeaux mixture destroy the insect that rolls the leaf on the Guelder rose or Snow Ball? A. Add Paris green.

Mr. BEADLE: What insect is that that is alluded to? There is more than one insect that goes after the Guelder rose.

Mr. WELLINGTON: Is it simply the green aphis?

DELEGATE: No, it is a black aphis.

Prof. FLETCHER: The insect which does the most harm to the Guelder rose in one generation appears green and the other with dark marks on the body, and it can be treated satisfactorily by spraying the bushes before the leaves open, when the twigs are covered with the eggs, with the kerosene emulsion.

Prof. BEACH: What strength would you use the kerosene emulsion at that time?

Prof. FLETCHER: The ordinary Riley-Hubbard mixture diluted with nine times the quantity of water.

Mr. WELLINGTON: The next question is, will it kill the bark louse? That question, I presume, is answered by your reply to the former question.

Prof. FLETCHER: Yes, sir; I think the best remedy undoubtedly is kerosene emulsion applied just before the buds open, or later.

Mr. WELLINGTON: The next question is, is there anything to destroy the scale on house plants?

Prof. FLETCHER: House plants are generally grown in sufficiently small quantities to make it practicable to wash them with soap, and that I think under all circumstances is the best treatment. If a sufficient number of plants are grown to use a mixture, a mixture of kerosene emulsion might be used quite satisfactorily. The scale on house plants I presume is the one that is common on the oleander and orange, and plants of that nature. The Riley-Hubbard formula is twice the quantity of coal-oil to soap-suds, and the soap-suds are made by dissolving half a pound of soap in one gallon of water. That is mixed with twice this quantity of coal oil, and you have then a standard emulsion, and with this you take either nine or twelve parts of water for application. For house plants twelve parts would be sufficient, because in a small plant you can apply it very thoroughly and see that every scale is touched. For application with larger quantities or large trees it is generally used in water nine times the quantity. For the Mealy bug a remedy is a small quantity of pure alcohol put on by a paint brush. The kerosene emulsion is good too.

Mr. WELLINGTON: Another question is, is it advisable to have holes bored in the apple barrels or to have the apples separately wrapped in paper?

Mr. A. H. PETTIT: The experiments which we have gone through in that respect when we shipped to Chicago were made in kegs lined with paper and the specimens wrapped in tissue paper. The gentlemen who kept the cold storage said they would not keep in that condition—the papers must come off and they must be put in the kegs. Our experience proved that this advice was not good.

The SECRETARY: The New York people didn't allow theirs to be unpacked and they came out in better condition than ours.

8. Which is best for apple trees, stable manure or wood ashes, and when should it be applied? A. Stable manure and wood ashes alternated in the spring.

9. At what temperature should apples be kept? A. About 33° Fahr.

SCORE CARDS.

Mr. A. H. **Pettit** read the following report of the Committee on this subject and moved its adoption.

Prof. **Craig** seconded the motion.

Mr. **Morton** : In adopting this report, do we commit ourselves to the values that are placed there ? I approve of the system but I disapprove of some of the values on some things. Acting as a judge at fairs as I do very often, I would respectfully decline to follow some of the values, though I approve of the principle, and have for some years followed the system of judging by points.

The **Secretary** : If any gentleman wishes to amend the values, the Association will consider them at any time.

The **Chairman** : I don't think the values are fixed for good and all. They can be changed at any time, but it is questionable whether it is advisable now to deal with that. I do not think that adopting this report really commits any man to follow out these values. The Association as a whole, or this meeting, would be committed to the values that have been decided on for one year simply.

Mr. **Morton** : We have here, for instance, a score card for "Collection of Apples." This card only proposes to add a maximum of ten for the quality and ten for covering the season. I think a good deal of importance should be attached to the fact that a variety of apples cover the season, and ten is altogether too small a number to be allowed out of a maximum of 490 points. It is proposed to give a maximum of ten points when we are judging apples and pears for cooking, the maximum of which is only ten for each individual species. For instance, ten varieties are shown which would aggregate a maximum of 120. In the one case it is only proposed to add ten for covering the season. In the other case, where it would aggregate 480, ten is also to be given. I think that less should be added for a collection of six varieties than if there were twelve or twenty-five. I think there should be a certain number added according to the number of varieties. If you were judging six varieties add twelve points ; for twelve varieties add twenty-four.

The **Secretary** : If that was in the form of an amendment I am not sure but we would be willing to adopt it.

Mr. **Morton** : I would prefer that the report be referred back to the Committee, because probably that is a point that they didn't give consideration to. I suppose the same thing would probably apply to pears. I am speaking solely with regard to judging on apples ; I am not a judge on grapes and do not pretend to be.

The **Chairman** : Will the Committee act on this suggestion and defer bringing in the report till some time this evening and consider this matter ? then we will receive the report and if necessary discuss it.

Mr. **Pettit** : The Committee will accept that.

REPORT ON FRUIT EXHIBIT.

Prof. **Craig** read the report of the committee on Fruit Exhibit at this convention, remarking that the local organization deserved great credit for the efforts they had made to give such a fine display of fruit. On his motion, seconded by the Secretary, the report was adopted as follows :

Your committee have to report that at the fruit exhibit at the winter meeting of the Ontario Fruit Growers' Association held at Orillia, on Dec. 5, 1894, the display of apples was one of the finest ever shown at a winter meeting of the society. The collection of local fruit shown by the Orillia Horticultural Society was exceedingly creditable and demonstrated that apples grown in the vicinity of Orillia reach a high state of excellence, and in point of coloring, size and flavor are unsurpassed by any in the province.

This collection comprised eleven varieties of fall apples and twenty-one kinds of winter apples, most of which were first and second prize plates preserved from the township exhibition.

Among varieties which stand out prominently on account of fine appearance and perfect development the following may be mentioned :

Fallawater, Pewaukee, Wealthy, Hurlbut, Fameuse, Mann, Ontario and Wagener. Fameuse and Wealthy as grown in this locality attain large size and take on a high color.

Among the newer varieties may be mentioned an attractive plate of Longfield, which has already been mentioned in the report on new fruits.* This tree is reported as prolific and hardy.

Mr. Robert Willis, Orillia, exhibits nine varieties comprising winter sorts including fine plates of Wealthy, Pewaukee and Mann, which received first awards at the township exhibition.

Mr. J. H. Tool, of Orillia, also shows nine varieties prominent among which are Wagener, Wealthy and Pewaukee. Mr. Tool secured sweepstakes prize on collection of six varieties at the county exhibition.

A collection of fall and winter varieties shown by J. W. Wainman, of Orillia, is worthy of mention and instructive from a local standpoint.

SEEDLING APPLES.

A number of seedlings of Duchess were shown, exhibiting great variation, but not promising in appearance or quality. No other seedlings in this collection were considered worthy of special mention.

A seedling white grape shown by Rev. Geo. Williams closely resembles Jessica in appearance and quality.

In collection of apples by W. H. Dempsey, Trenton, Ont., are included a number of interesting varieties of European parentage.

Ontario is shown of good size and fine appearance. A fact which has been already noted in regard to fall and winter types of Blenheim Pippins is brought out by both varieties being exhibited. The fall type is much larger, with more color and fully six weeks earlier than the other.

A collection of sixteen varieties of Russian and hardy apples is shown by the Central Experimental Farm. Prominent among them are Arabka, Canada Baldwin, Scott's Winter and Gideon.

Thos. Beall, of Lindsay, shows fine specimens of Ontario, and a number of varieties without name.

Collection exhibited by W. S. Turner from Stormont county is worthy of mention. Fine plates of Gideon and McIntosh Red are shown.

Wm. Cornish, Little Britain, shows ten varieties of apples, mostly winter, all in good condition.

Mr. Wellington Fisher, of Orillia township, exhibited a collection of the newer varieties of apples well adapted to cultivation in this locality. A number of these were prize winners at the county exhibition.

J. C. Wilson shows four winter varieties.

W. H. Leif, Orillia, shows three varieties of apples all beautifully clean as an object lesson of the benefits of spraying.

Wilson Arnot, Trenton, Ontario, sends a collection of eleven varieties of apples, each made up of remarkably fine specimens.

An unusually fine sample of Ben Davis were shown.

Kings and Northern Spys are also exceedingly fine in regard to flavor and coloring.

D. Galloway, More Falls, Ontario, sends two seedling apples which are not of sufficient merit to be recommended.

Mr. DeHart shows six varieties of apples including seedlings and named kinds.

W. M. Robson, Lindsay, Ont., exhibits five varieties of apples among which was Magog Red Streak, which may be described as follows: medium large, roundish conical, deep golden yellow with slight blush, stem rather long and strong, flesh white, firm, fine grained, sub-acid, quality medium to good, most valuable for the north.

PEARS.

The collection of pears was small.

A. M. Smith shows Lawrence of characteristic fine quality, Keiffer and Anjou.

T. H. Race, Mitchell, Ontario, shows a large pear said to be of seedling origin; at this date quite unripe.

Linus Woolverton exhibits a Russian pear called Medviedka, small size, pyriform, quality medium, with some astringency. The tree being hardy this variety may have value at the north and should not be lost sight of.

W. M. Robson shows a plate of Josephine de Malines in good condition.

GRAPES.

W. M. Orr, Stony Creek, Ont., shows characteristically fine samples of Vergennes in a perfect state of preservation, which further emphasizes the value of this variety as winter grapes.

Murray Pettit, Winona, Ont., exhibits twenty-four varieties, including black, red and white. Among the newer varieties your committee noted Anderson A black grape; bunch medium, not shouldered; berry, large round; skin thick; pulp melting; seeds large; quality good.

Early Dawn is a small black bunch and berry, not promising.

Among red ones excellent in quality are Essex, Agawam, Salem and Goethe; of white, Lady Washington, Niagara and Duchess; black, Herbert, Barry, Wilder and Aminia are noticeble. This exhibit should be highly commended on account of its educational value.

Catawbas in a well-ripened condition were also shown.

Linus Woolverton, Grimsby, Ont., shows twenty varieties.

Victoria, a white variety, bunch and berry medium size, commends itself as an amateur variety on account of quality.

Triumph, white, as shown is of poor quality, late, and cannot be commended.

Noah, white, appears to be worthless on account of poor quality, and liability to be affected by mildew.

The committee wish to express their appreciation of the efforts of the local committee in making arrangements for and getting together such a beautiful display of locally grown fruit.

Committee {
W. H. DEMPSEY, (Chairman.)
J. H. TOOL.
W. E. WELLINGTON.
JOHN CRAIG.

The meeting adjourned at five o'clock.

SECOND DAY—EVENING SESSION.

The PRESIDENT asked the Secretary to read his paper on the Inspection of Fruit, in answer to question 14. Shall we Drop Fruit Inspection or Push it Forward?

The SECRETARY read his paper as follows:

FRUIT INSPECTION.

The codling moth must be routed from Ontario orchards and our shippers must exert themselves more faithfully in spraying with Paris green which is the best-known means of exterminating it. In packing, all wormy apples should be sold at home or fed to stock and never shipped to distant markets, or else the results will prove most disastrous to our Canadian export trade. Recently a carload of apples has been seized in British Columbia by the fruit inspector of that province and ordered to be destroyed because they were found to be infested with this moth. This is in accordance with one of the laws of British Columbia. The section reads—"All persons possessing, forwarding or distributing trees, plants nursery, stock or fruit infested with any insects, such as woolly aphis, apple tree aphis, scaly bark louse, oyster shell louse, San Jose scale, red scaler, borers, currant worms or other known injurious insects, shall have the same disinfected and cleansed of such insects before forwarding, distributing selling or disposing, of said plants or fruits.

Here is the clipping from the *Daily Globe* of Friday, November 2nd in reference to the seizure of these apples.

Mr. Bosworth, assistant freight traffic manager of of the C.P.R. received the following despatch yesterday ; "British Columbia Government fruit inspector is condemning apples shipped from Ontario on account of their being infested by a larvae of the codling moth, and he is insisting that a carload of apples now there shall be destroyed by fire. Unless shippers are careful in filling orders for British Columbia market to see that the fruit is free from infection of this kind, serious loss will result. Inquiry by the Globe among the fruit dealers of this city failed to reveal any cause of such alarm as is suggested by the despatch. There is no prevalence of the codling moth this year and the shipment in question they think must have been of fruit poorly handled, if it was not made up of windfalls."

There is no doubt much carelessness in the management of our orchards by some growers and consequently their fruit is badly infested with the codling moth. I know of an instance where one-third of a man's whole crop of apples was infected with the larvae of the codling moth above referred to. But this state of affairs can be largely remedied. Sheep or pigs in the orchard will eat all the wormy fruit as it falls, hay bands will catch them, spraying will poison them and careful sorting will prevent any of them being exported.

Would it not be well for growers of first class-fruit to be all agreed together that they will pack only stock which is free from worms, and graded according to our No 1 and No. 2 classes which have already been described in the, Canadian Horticulturist, and incorporated in the Dominion Inspection Act, and hand in their names to the editor for publication under a special heading in the advertising columns. Such a list would not need to cost each grower more than ten cents per month, and circulating, as it does among the leading fruit merchants of Canada, United States and Great Britain, would tend to bring our best growers into connection with our best buyers.

The desire for an inspector of apples is widespread, not only among fruit growers themselves, but also among apple merchants. In proof of this I give you here an extract from the "*Fruit Trade Journal*" published in New York.

" Many Canadian merchants are complaining of the swindling operation of some packers who top off barrels of apples with one or two good layers, and the balance with culls. There is talk of having the Legislature take up the matter and appoint an inspector. Leading fruit men of Ottawa have been interviewed by the "Free Press" as follows :

Mr. H. A. BROUSE said : "Yes I certainly am in favor of a scheme of Government inspection. The loss is something terrible, but we have adopted a remedy for our financial loss, though the annoyance and trouble cannot be repaid. We buy our goods in a way that we deduct so much for loss or deteriorated quality, but even then the evil is not avoided. We are annoyed by mixed barrels and fraudulent branding. It is impossible when getting in hundreds of barrels to examine them all and we often run against a badly packed barrel. "

BATE & Co. said : "Yes we are certainly in favor of an inspector. It is a long standing complaint and a serious loss and cannot be remedied too soon. "

KAVANAGH BROS. said: "This bad packing of fruit is a perfect nuisance and a matter of a great loss. Certainly a fruit inspector should be appointed at once."

The Montreal *Trade Bulletin* of the 23rd contains the following article on Apple Inspection:

"The present season has demonstrated the necessity of an inspection for apples, large quantities of inferior fruit having been shipped to the English market that never should have good forward. An inspection law, providing for the inspection of apples, would be the means of doing away with a great deal of miscellaneous consignment business now going on, as many buyers on the other side would prefer to buy either on a f.o.b. price here or a c.i.f. basis on the other side, if they were sure of the quality we were getting. An inspector's certificate would greatly facilitate the export trade in apples, while it would be the means of preventing the large quantities of poor fruit which find their way over to the other side, to the great detriment of the prestige of Canadian produce. The writer has mentioned the subject to several leading men in the export trade, and they are of opinion that steps should be taken, in order, if possible, to secure a proper system of apple inspection, especially as the trade is increasing so rapidly."

The question now before us is—Is apple inspection practicable or impracticable, and if practicable, how? Perhaps our previous plan was impracticable. No man is willing to undertake the work of apple inspection on the mere chance of getting now and then a car load of apples to inspect at ten cents a barrel, nor is any man willing to become responsible for the marking of a grade of apples in carload lots and thus assuming the responsibility of saying that the whole are No. 1 grade, but he can condemn such lots as he finds to be packed in a fraudulent manner.

I propose the employment of an expert fruit inspector by the Dominion who shall be paid a liberal salary and whose business it shall be, (1) in the spring to inspect fruit trees and vines that are being imported and thus prevent the introduction of fungous diseases and injurious insects; (2) in the month of June or July and August it be his duty to enforce the plum knot act and the destruction of peach yellows, and (3) from September to March to inspect such shipments of apples as it may be possible for him in order to prevent as far as he can, the shipment of any fruit that is fraudulently packed, or which is infected with codling moth or apple scab. Also any apples found to be inferior to the brand under which they are shipped, he shall cause the brand to be erased from those barrels. To the same man appeal could be made by either buyers or sellers in the case of a dispute as to whether a certain lot of apples which had been purchased was up to the grade marked upon them. He should also be empowered to give an inspector's certificate of grade to any lot of apples for export, on certain conditions, thus facilitating sales f.o.b.

Certainly the grades should be clearly defined, and then as much publicity as possible should be given to them, in order that they may becomes a convenient basis of bargains and sales between distant parties.

I move that after a full discussion on this subject, a committee be appointed by the president to take this matter into consideration and report at this meeting.

The SECRETARY moved that a committee be appointed by the President to take this matter into consideration, and to bring in some resolution giving the views of the association on the subject.

Mr. CASTON: As the subject matter of this paper is the same as one that was dealt with by a committee this afternoon, I move that it be referred to A. H. Pettit, Mr. Boulter, Mr. Fisher, Mr. Dempsey of Trenton, and the mover.

The SECRETARY seconded the motion which was carried.

SCORE CARDS.

Mr. A. H. **Pettit** brought in revised report of committee, which was adopted as follows :

We, your committee, beg leave to report that having consideredthe advisability of awarding prizes at our exhibitions by a scale of points, as submitted by the Secretary, we would recommend the adoption af the score cards, with the amendment that in awarding the points for "Covering the Season" in collections, the maximum be computed on a basis of five points for each variety shown in such collection.

Committee	A. H. Pettit. T. H. Race. M. Pettit.

COLLECTIONS OF APPLES.

Mr. A. H. **Pettit** moved the following resolution regarding offering prizes for apples for export.

Mr. **Beall** seconded the resolution which was carried.

"That in the opinion of this Association the offering of awards on large collections of varieties of apples at our exhibitions is not productive of profitable results, but in lieu thereof prizes should be offered for the best collection for export."

EXPERIMENTS IN SPRAYING.

Mr. A. H. **Pettit** moved a resolution in reference to spraying experiments by Prof. Craig, which was seconded by Mr. Beall and carried heartily.

Resolved, That we the officers and members of the Fruit Growers' Association of Ontario, desire to express our warmest thanks to the Hon. A. R. Angers, Minister of Agriculture for the Dominion, for the prompt manner in which he acceeded to the request of this association, in placing the able services of Prof. Craig at their disposal, to conduct the spraying operations for the destruction of fungi and insect pests, and we wish further to express our appreciation of the thorough and energetic manner in which Prof. Craig carried to a successful issue experiments which are of the utmost importance to the profitable cultivation of fruits in this province, and that the secretary be instructed to forward a copy of this resolution to the Hon. the Minister of Agriculture.

THE CODLING MOTH AND PLUM CURCULIO.

Prof. **Jas. Fletcher**, Entomologist, Central Experimental Farm, Ottawa, said : "The plum curculio in its perfect state is a small beetle, and having studied out the life history of this insect we are able to get at the remedy. There is only one brood in the year. With some insects there are two or three broods. It is very important to find out the life history of an insect before we can begin to fight against it.

The plum curculio passes the winter as a perfect beetle. Knowing this we can understand how a remedy can be efficacious which at first sight would hardly appear to be so. The beetle in its perfect state comes out as soon as spring opens, and is in an active condition then to injure any of its food plants. Its food plants are of the plum and cherry families. It was found out twenty-five years ago by Prof. Riley, of Washington, that the perfect beetles feed not only on the new leaves when they first open out, but also upon the young twigs of the trees, the bark of the young twigs. Experience has shown us that an efficacious remedy—not perfectly efficacious, but sufficiently so to make it a paying and practical remedy—is the spraying of our trees with one of the arsenical poisons, the most convenient of which is Paris green. Now, it was hard to understand how an insect which as far as most people knew only ate a small portion of the plum which was sufficient for it to lay its egg, could be poisoned by this remedy, but we find that it feeds on a larger quantity of the plant than that, for it feeds on the young leaves and also on the bark of the young twigs. With regard to the laying of the egg of the plum curculio, the statement has been made that this is affected by the poison which we spray on to our trees; but this is not the case, because the egg of the plum curculio is never at all exposed or in such a position that it can be affected by that poison. The *modus operandi* is this: the beetle settles on the fruit which it is going to puncture and injure. It often bites round a crescent-shaped channel in the side of the fruit, and lives in that way inside the crescent or flap-like portion of the fruit. It then lays an egg by burying the egg into that flap and inserting the egg and pushing it right down to the bottom of it by means of its beak, so that the egg is never exposed and cannot be affected by poison. The only good, then, in its application is that the insects in eating the leaves and the small portion of the fruit which they cut out in cutting out that channel, are subject to a certain portion of that application. Now, we do not know that this Paris green may not also have a deterrent effect in keeping the insects away from the trees altogether. We only know that good results are obtained by spraying the trees in the spring for the plum curculio. There is no necessity, nor would there be any good in repeating that spraying after the eggs are laid, but it sometimes becomes necessary to repeat the spraying from the fact that the egg-laying season lasts during considerable time. Many of the insects last in their perfect state for at any rate a month or a little longer, and in such an insect as the plum curculio, which begins the spring in the perfect state, the season is brought down to a much narrower limit than is the case with many others that emerge from their chrysalis or third stage at some other time of the year, because anything that may deter or check them in their development of course would extend the season during which the perfect insect emerges. It may not be necessary, but there may be no harm in mentioning for one moment that all insects pass through four stages. All insects come from insects like themselves. There is no such thing known in any branch of natural history as spontaneous generation; and although this is the general opinion among people not conversant with different branches of natural history—some people think that mosquitoes, cheese-mites and many other insects come into existence in some curious way that has not been explained, owing to the decay of the object upon which they feed—I merely say that this is entirely wrong. All members of the animal world, and insects belonging so the animal world, are subjected to the same laws and created under the same laws, whether they be large or small. All insects, then, come from the male and female like themselves and are reproduced. All insects pass through four stages. First or all there is the egg; then from that the caterpillar stage; then the third stage or chrysalis and then the insect. In the case of the plum curculio the egg is laid, a young maggot hatches from that egg and attacks the fleshy portion of the plum. After a time in the case of plums the fruit drops to the ground—in the case of peaches and cherries sometimes not at all—and very frequently cherries remain on the tree until the insect has passed through its second preparatory stage, and is ready to assume the third or chrysalis stage. At that time it leaves the fruit and falls to the ground. It remains under the ground for a short time, and then comes out in a perfect state in the autumn, and then hibernates or passes the winter under any object of refuge that it may find, either in the crevices of the bark, under grass or other litter left about in the orchards. That indicates to us the necessity or the advisability of clearing up all rubbish that may be left about in our orchards. Again in the spring when these insects appear, long before the flowers or the young fruit is ready to be injured, they frequent the trees and then go to the ground and hide about the bases of the trees, and only come out during the night or on dull days when they are not seen, frequenting the trees and eating the young bark. This shows us that the early spraying, combined with insecticides and fungicides that are so largely used, would be advantageous I refer to the fact that insects may be deterred from attacking the trees by some other means than by the direct poison taken by being eaten. Now we know that various insects are attracted by various scents. People who collect insects frequently make a mixture of sugar and beer or sugar and essential oils, which they place upon trees, and in that way insects are attracted to them. In the same way we find that every plant when bruised has its own essential odor ; if you bruise an onion, there is a peculiar odor ; if you bruise a cabbage, it is the same way ; and when we handle plants to transplant them, they become very much more liable to attacks of insects than when grown in the ground. Everybody has noticed that cabbages when grown in hotbeds are not so much subject to attack as when planted in the ground. This comes from the fact that in handling them they are subject to attack. Now, Paris green has decidedly a perceptible odor when mixed. Everybody has noticed the peculiar—and to some people very suffocating—odor that it has. Two of my acquaintances are so much affected by Paris green as to make it quite an unpleasant poison for them to use, and in fact one gentleman present here, Mr. Hilborn, cannot use it at all, and this is not fancy, because on one occasion when he was at Ottawa, I mixed Paris green with some other material and asked him to use it, and he came over to me some time after and said, "I don't know what that is, but there is Paris green in it, for it makes me feel faint or unwell." It may be that Paris green, having a peculiar odor, is a deterrent, and makes those insects keep away. It does not matter whether we can explain how it does keep insects away ; practical experience has shown us that when plum trees are sprayed in the spring the crop reaped from them is much freer from curculio than when it is not done ; therefore, fruit growers who want to save their pockets should spray their trees. This remedy is not so efficacious as it is in the case of the codling moth, which is the one that is spoken of so frequently as the apple worm. This apple worm is the result from eggs laid by a small moth. In the latitude of Ottawa, we have distinctly only one brood in the year. When you get west of Toronto you come to a region where there are frequently two broods. When you get to London you come to a district where there are always two broods, and the second one is the more injurious. When we get to the Pacific coast, and California and Oregon and Washington Territory, there are three distinct broods, and sometimes what is called a subsidiary brood, that is, an accidental brood which grows in certain seasons. The life history then changes in different districts. At Ottawa, we can spray our fruit trees once in the spring, and the practical result is that our trees are exempt from the codling moth ; and I think it is not too much to say that if trees are carefully sprayed in the spring, during the time that the moth is laying its eggs, our apples will be free from the codling moth. Prof. Craig, in treating our orchard at Ottawa, has had this result which I speak of. His apples were practically clean, and no appearance of the apple worm, and this was from the careful way in which the work was done. Mr. Robert White, who is present, tells me that they were practically eradicated from his garden after he sprayed. Before he did so they appeared every year, and he hardly ever got a crop of Tetofskys or Duchess apples, and now he has them ; and of course they come at a time of the year when apples are very valuable, because they take the early market and are very acceptable and easily sold. I would direct the attention of all fruit growers and those interested in the growing of fruits to the little bulletin that has just appeared from our own Department of Ontario at Toronto Prof. James has given here some extracts from letters which he has received, and as it will be useful perhaps to comment on some of these, I will, with your permission, take a couple of minutes to read some of them. From Essex he gets the report · "Apple worm very bad on trees not sprayed." Then we may gather that upon those that were sprayed they were not so. This merely bears out and confirms the experience in other parts of Canada and North America. Again from Essex : "There have been a few local tests of spraying apple trees. Where they have been sprayed three or four times at intervals, the results have been almost marvellous." Then he goes on to say : "Fine, large and good apples." From Leamington : "People are finding that it pays them to spray" That is the crucial test that we have to apply to all our work ; if it does not pay us to spray, it is no use doing it ; if it does pay us to spray whether the results are what are claimed for the methods or not, we must do it if we want to make a success of our business. From Huron county : "Insect pests, notwithstanding the application of the Bordeaux mixture, have done immense harm to orchards this season." And why shouldn't they ? This is one of the instances that were very frequent years ago, but not so much to-day, when people thought it was a panacea whatever the insect attacked. Now, Bordeaux mixture, although it has very decided insecticidal qualities, is not an insecticide first of all; it is a fungigicide, which, by virtue of copper salts, destroys all fungous pests; and we are going to get to this difficulty now, that as it has become popular and people in Ontario and Canada are saying it pays them to spray, a great many people who don't pay the proper amount of attention to the proper methods for any certain disease or injury, are going to use the wrong application. Now, Bordeaux mixture is not an insecticide to be applied generally, and as a matter of fact I only know of two particular kinds of insects where Bordeaux mixture actually acts as an insecticide. One of the most remarkable of these is with regard to the potato. Now, the Colorado potato beetle is very easily treated, as everybody knows, with Paris green; but there is another little insect, the flea beetle of the potato, which is extremely difficult to treat with Paris green. Two very good results have come from the work of Prof. Jones of Vermont, and of my own at Ottawa, during the past year—that potatoes sprayed with Bordeaux mixture to prevent the fungous disease known as potato rot, were also exempted from the attacks of the potato flea beetle. The potato flea beetle, although not in Canada such an injurious insect as many others, is reckoned by Peter Henderson as of more injury to potatoes, as injuring the crop, even than the Colorado beetle, and he found it most difficult to abate. Now, we find that the Bordeaux mixture acts as an insecticide for that. The same results were found with Prof. Craig in Ottawa. This year, when they were spraying with the Bordeaux mixture and Paris green, excellent fruits were grown, and with very much less trouble than ever before. We must know these different remedies. We must know those that are applicable to the case in question, and those are the only ones that we must apply, and we must not expect that we are going to get those results easily. It has taken fifteen years of constant dinning, point after point, to get the people of Canada awakened, and I don't know anything that has given better results than the resolution passed by this associationl ast year, by which the Government at Ottawa was requested to get Prof. Craig to lay out that plan of experiments; and I think there is nothing that the country should be more thankful for than that this association did pass that resolution, that the Government did send Prof. Craig, and that you had such a competent man to carry out that work among so many difficulties. When on one occasion he went there, and all his pumps burst and everything went wrong, he was not disheartened at all, but he got off by a night train and went into the United States and got the best pump that was to be had, and forced a success when other people would have failed. (Applause.) I think that everybody should recognize that it is not only the work done by the association in getting that plan suggested and brought about, but the exceptional man that you had to carry it out and force it through to success. Now, it is necessary for us to know which remedy to apply, and therefore I have always made it a practice in speaking and writing to condense the experience of others with my own down to the point of saying which is the best remedy, to mention that one remedy only, and let other people that like to experiment go through all the work again that other people have done, and play with the other remedies, and amuse themselves if they like; but I tell them beforehand that it is going to be an expensive amusement, and they had better consider beforehand and find out which is the best remedy. Now, which is the best remedy for those two insects I have spoken about? People say Paris green is not an efficacious remedy for the plum curculio, and they say jarring trees is a better remedy. Well, so it is if you are playing at fruit growing; but if you are making a business of fruit growing and you have seven or eight thousand trees, I think you will find it is rather an important thing to find out which is the only practical remedy. Now, the only practical remedy is spraying your trees with these arsenites that I have mentioned, and those of your best fruit growers that have their experience say that it is the remedy which finds them, and is therefore a practical remedy. It is my duty to consider most carefully all the remedies that have been suggested, and I unhesitatingly say that the remedy for plum curculio is spraying the trees in the spring. An early spraying will be more efficacious than if you begin only when the fruit is formed. With regard to the codling worm I forgot perhaps to mention that its life history is this: The egg is laid by the moth when the apple flower is turned up. You remember on the plan that was shown this afternoon by Prof. Beach, the flower of the pear is cup-shaped. It is the same in the apple flower. You all know that as the apple increases in size, the weight is greater than the slender stem can bear, therefore it is carried down by its own weight, so that the cup, the calyx, is turned down. Then you must do your spraying before that calyx turns down. A sufficient quantity of this poison is lodged in the cup of the flower, and when the young caterpillar, which is extremely delicate, first hatches, it is at once killed and never makes an entrance at all into the apple. With regard to the second brood, which in this district or probably farther south than this, occurs injuriously—and this year was injurious on the pears in the Grimsby district—it is rather a more difficult subject to treat; but if you mix with your Paris green the Bordeaux mixture for your fungous diseases, and you spray your apples anywhere in the first half of the month of August, you will spray them when the eggs are being laid for the second brood of the codling moth. Generally, where two fruits hang together I think you will find it would pay you very well indeed, and the results will be satisfactory if you spray your fruit at that time. The dangers of spraying with Paris green have I think been so thoroughly explained away that we need not discuss them now. Careful analyses have been made over and over again, by which it is shown that the elements remove all traces of those poisons, and if the rain and wind do not do so, the natural expansion of the fruit forces off this dry powder so that it does not remain on the fruits.

I shall now pass on for a few minutes to some other insects, to put you on your guard against them. One of the insects which has occurred this year is known as the pear tree Psylla or pear tree flea louse. It belongs to the same class as the aphis, but it has the very decided difference of being able to jump, and is therefore called the flea louse. Its injury is this: it enters the stems of the flowers of the pears just as they open. The consequence is they drop from the trees, and flowers and leaves also and even if the leaves only drop the fruit will be injured, because the fruit has not the leaves. There is an excrementitious matter dropped by these little insects upon which a dirty fungus grows. The remedy is the kerosene emulsion which we spoke of this afternoon, and we have found by spraying the trees with this in spring, just as the leaves are opening, that these insects are destroyed and all injury stops. Another insect which fruit growers must be put on their guard against is the Pernicious scale or the San Jose scale. This is a native of Chili, in South America. It was introduced into California on some scions of fruit trees brought from Chili some fourteen or fifteen years ago. It was introduced three years afterwards near San Jose, California. The fruit packers and merchants gave it the name of San Jose Scale from that fact. In 1881, at the time it was described by Prof. Comstock of Washington, it was called Pernicious because it was the most pernicious enemy of deciduous fruit trees on the Pacific Coast. It had confined its injuries to the Pacific States. This last year was found not to be the case—it was found in Maryland, New Jersey, and some other of the Eastern States. At once the United States entomologists got out a circular, of which twenty thousand were issued in one month, to all the fruit growers and entomological societies, and it was well advertised. The effort that was made by the Government Department was followed out by the nursery men and fruit growers to the extent that probably at the end of this year, or certainly during this season, that insect will be eradicated where it has been traced. Great care has been taken to find it out. It has been traced into every orchard, and it was traced back to two nurseries in New Jersey, and their order books have been gone through and everybody to whom fruit trees have been sold has had his orchard visited; and I think we may say with very great reason of hope that it will be thoroughly eradicated during this season. I mention this to you because undoubted specimens of this insect have been sent to me from British Columbia. We shall take vigorous measures to have it eradicated. The British Columbia Government has taken very decided action to keep it from their province. Fifteen carloads of apples which were sent from Ontario growers to British Columbia were condemned and destroyed by the British Columbia Government, causing a great deal of friction; but when my opinion was asked I had to say that I thought they were justified in taking those extreme measures, because the codling worm does not exist in the Province of British Columbia. I took it for granted that it must exist there, as it is extremely injurious in Washington Territory, and

California and Oregon. From all authoritative sources of information, however, I cannot find confirmation of the statement that the codling moth is bred in British Columbia. If that be the case the Government of British Columbia are justified in most strenuous efforts to keep it out, for we here know how much the loss is; and on that occasion I wrote to the Government saying I believed the Executive officers of this Association could put the buyers and the shippers in possession of lists of the advanced fruit growers of this Association who had adopted the methods which had been advised so long of spraying their fruit trees, and in that way producing uninjured apples. I have not had an opportunity of asking you, but I think it is probable that either the Canadian Pacific Railway or some of the authorities will apply to me for that list; but this I know, that if the fruit growers here have applied the accredited methods that have been advised, they certainly have grown clean fruit if that work has been done carefully and properly as we know it ought to be. The remedy for the San Jose Scale is that same kerosene emulsion which we have mentioned. During the winter it may be applied to all trees at the dilution that I have mentioned—nine parts of water to the stock standard emulsion.

Mr. Hilborn : Would you please describe that scale ?

Prof. Fletcher : The general appearance of it is as if the branches of the trees had been dusted with ashes or lime.

Mr. Hilborn : I found a tree like that in my own orchard this year.

Prof. Fletcher : Then you must examine it critically to see whether the scales when removed from the branches are oval or elongated. If it is a San Jose scale the scale is round, and it is the only round scale that is likely to occur on our trees in Canada. When full grown it is from one-eighth to one-sixteenth of an inch. When taken off the branch—each scale taken off and separated—it is only then you see the extent, so that the appearance is of a small round scale one tenth of an inch in diameter and of a small protuberance in the centre, but lying flat on the branch and giving the branch the appearance of being dusted with ashes or lime.

Mr. Hilborn : That is just about the description of what I have.

Prof. Fletcher : I should be obliged if you would send me this. It is a very serious matter to decide what it is.

A Delegate : What varieties of trees does it attack ?

Prof. Fletcher : It attacks everything. It has done the greatest injury to peaches, oranges and stone fruits, but in California they found that every variety of deciduous fruit trees—all the trees that drop their leaves were attacked by it.

Mr. Hilborn : This was on young apple trees ?

Prof. Fletcher : It attacks apple trees very seriously.

Mr. Morton : Does it attack any ornamental trees ?

Prof. Fletcher : Yes. Scale insects of all kinds are extremely abundant and injurious. The ordinary oyster-shell bark louse is a disgrace to the province and the whole of North America, because it can be controlled, and the methods are to fertilize well your orchards, feed them and see that they are properly cultivated and attended to, and if that does not keep them down spray your orchards with kerosene emulsion, and they can be overcome. The bud moth may be overcome by emulsion. A minute caterpillar spins a case shaped liked a minute cigar. The life of the insects is this: the eggs are laid, and the very small eggs of the caterpillar are seen at the end of August. They go beneath the leaves and cluster round the twigs of the apple trees, particularly on the spurs where the bark is a little rough. They remain there during the winter. In the early spring they come out and puncture the stems and leaves and flowers of the apples and do a great deal of harm. The only remedy which has given a successful treatment is to spray them early in the spring with kerosene emulsion. This has the effect of puncturing into these little cases and getting into the caterpillar beneath. The buds are not sufficiently large to hold Paris green, so emulsion gives the best results, although Dr. Young, of Adolphustown, treated them successfully with Paris green. For borers in apples the treatment is a preventive one, and every fruit grower should adopt the method by which all his trees are washed with a preventive wash to keep out borers during June every year as a matter of course. I do not think I have ever seen a borer at the Experimental Farm, and the reason I believe is entirely that Mr. Craig systematically and as a method has all his trees washed with the ordinary soda and soft-soap wash every year. Mr. Wellington Boulter has a method of washing his trees with strong lye, and he has trees half as big as my body which are just as smooth as the young bark on a new limb, and from this careful treatment systematically done every year. The young insects which lay the eggs from which the borers come are beetles. They will not lay their eggs on trees which have been washed with the deterrent wash such as I have mentioned. The canker worms all through Canada have done up and down a great deal of harm where the trees have not been sprayed with Paris green. I know there are instruments called tree-protectors, that there are bands of straw, and many other things to protect trees, but I don't think they pay for the time necessary to put these bands around the trees to keep the moths from climbing up in the autumn. One plan is to put a band of paper with sticky stuff on to keep the moths from going up, and I was asked, is it satisfactory? Yes, it is for a certain time, but when we have some days that are extremely cold, whereas that sticky stuff has to be kept in a viscid state, it does not work. These insects come up from the ground and that viscid matter—be it printers' ink, or rosin and linseed oil—in the cold nights will be sufficiently hard for the insects early in the morning to walk over it, and when the insects are very numerous they get so thick on the bands that those walking up walk over the bodies of those that have been caught in the bands. I believe the best remedy for the canker worm is to spray your apple trees at the same time as you do for the Codling moth with the Bordeaux mixture and Paris green. The bark beetle is very troublesome in the Niagara district, and is now doing a great deal of harm. This beetle only bores in the bark, but it has the effect of bringing out from the tree on every warm, dull day in the winter large quantities of gum—so much so that you can take two quarts of gum around the base on a small six or eight year old peach tree. Now, that gum is taken from the tree, and the amount of mucilage that is taken out of that tree is so much strength taken out of it which would have gone into the fruit of the following year. The result is that those trees are injured. Up to the present I have not a satisfactory remedy for this insect. We have found, however, that it is active and begins to work as early as February. On the bright, sunny days these little creatures come out. This year we shall try earlier to control it, and I think that applications to the bark of either kerosene emulsion or mixtures of whitewash and Paris green frequently repeated will have the effect of keeping this insect in check. Currant worms of course turn up every year—it is one of the insects which has been mentioned to me as injurious. The remedy is to spray them the first time they appear, just when the flowers are opening, with Paris green, or dust the bushes with Paris green and land plaster or lime, or some other diluent of a dry nature in the strength of one pound of Paris green to fifty of powder. There is no danger in using hellebore, for although it is a poison it is a vegetable poison which once diluted loses its power, and only affects insects on the bushes at the time. There is no use making tea out of used up tea leaves; it is the same with hellebore—having once diluted the dry powder it loses its strength, so it is not likely to be dangerous in any way in placing it of your currant bushes. The oblique banded leaf roller was injurious at Freeman, and was sent to me by Mr. Freeman of Freeman at the same time as the pear tree siller. I would like to refer to a matter that came up through the association, and upon which Mr. Craig and I wrote a letter to the "Canadian Horticulturist," and which has been referred to by Mr. Woolverton this evening, and that is the presence of black knot. I think we have got about to the understanding of this, that it does not matter very much to fruit growers whether that injury or disease is due to an insect or fungus or animal or anything else, but we do know this, that if these black-knots are cut out and destroyed you don't have the same danger to your trees afterwards; so I think we may give up the discussion. I don't think probably anyone that wrote the articles that were written will be prepared to say it was due to an insect any more than we say that mushrooms are due to the maggots which we find in them when they begin to decay; but the argument has been that because the black-knot contains maggots when they are decaying, that therefore the maggots form them. I don't think the man is found yet who would argue that maggots in mushrooms form the mushrooms. Let people have their theories and amuse themselves with them; but if you want to grow plums, cut out your black-knots—that is all the part that concerns you or me; cut them out, and you will have them a good deal freer. (Applause.) In the township of Nelson, in Halton county, owing to the energy of Messrs. Peart, Fisher and Freeman, they have induced their municipal council to pass a law by which they insist that inspectors should be appointed whose duty it is to go through the plum orchards and see where the black-knot occurs. It is the same, I believe, in Mr. Pettit's region. They go through the plum orchards, and if they detect plum knot they notify the owner of that orchard that black-knot is there and that he must get rid of it. If they have not done it in ten days they become liable to an action, to be brought before the magistrate, and more than that—here is the safeguard—if the inspector does not make those people cut it out or take them before the magistrate, any ratepayer may have him brought before the magistrate and fined for that neglect of duty. So I think the time will come when we shall get rid of the black-knot if this method is generally adopted and carried out. A great advance has been made in horticulture during the last three or four years. Three or four discoveries may be mentioned which have revolutionized the whole of agriculture in this country. First of all there was the discovery of the spraying nozzles; and don't forget that when we recommend spraying a tree we mean spraying—we don't mean sending a douche over a tree or sprinkling a tree; we mean sending a spray that falls in a light, dew-like mist over the plants. To do that you must have a proper nozzle and a proper pump, and if you carry your pump in the shape of a knapsack, you must have pluck enough to do it till it hurts you. It is pretty hard work, and if you get a man to do it for you, you must see that he does it till it hurts him, for it is a very hard thing to pull the handle of the pump hard enough to force your liquid into a spray; but if you don't do it you might almost as well not do it at all. You have to cover the whole surface with the application. The discovery of the kerosene emulsion—the mixture of these chemicals and some coal oil which would render it innoxious to the plant you put it on—the discovery of the arsenites—are all discoveries of enormous importance. They are advantages you have which your fathers had not; for insects' injuries are no more abundant now than they were then, only fruit growing was thought so little of that they didn't think anything if they lost three-quarters of their crop in those days. Now, it has become a business involving not only an enormous amount of capital, but scientific knowledge and data which are necessary to every man to apply these remedies intelligently. More than that the advanced fruit grower to-day recognizes this, that many of these insects are not an unmixed evil, because he knows that if he will only apply the accredited and best methods that have been discovered he will secure enormously better crops than his ignorant and negligent neighbor who does not apply anything at all. (Applause.)

Mr. MORTON: I desire to move that the thanks of the members of the Fruit Growers' Association and the audience present, he tendered to Prof. Fletcher for the lucid and concise as well as exceedingly interesting discourse he has given us this evening. One of the pleasant features to me is that he is able to get down to the common understanding of us common folks. Scientists very often are apt to indulge in that unintelligible jargon with which they attempt to convey their scientific ideas. I for one must say that I have been intensely pleased with the discourse that we have had this evening.

Mr. BOULTER heartily seconded the motion, which was carried amid applause, and Prof. Fletcher briefly acknowledged the vote.

The SECRETARY: I want to ask a question about the raspberry cane borer. This letter was sent to the Deputy Minister of Agriculture, and the inquiry is this: "As you are to be at the big meeting on the 4th where the greatest of scientists and experts will be, I and many others will be forever obliged if you will ask in the open meeting what is best way to prevent the spread of the cane borer and saw-fly in raspberry bushes? If it gets a little more headway in Ontario we will have to go out of the business. I can cure any disease among bees, but I am beat out with the disease in raspberry canes."

Prof. FLETCHER: I don't know how the gentleman has had such difficulty, because among injurious insects I don't know one that is less trouble to combat than the raspberry borer, if I am thinking of the right one. It attacks the raspberry shoot for the following year when it is about two and a half feet high, and the tip at once fades and turns down, so that you can tell every tip that is injured, and you can cut off the tip of the cane.

Mr. HILBORN: I think it is the one that lays the eggs.

Prof. FLETCHER: This is not the borer at all. These eggs simply are the eggs of the tree cricket, and the part affected may be easily cut off and burned. The saw-fly is quite easily controlled with either hellebore or Paris green.

Mr. CASTON: In using this kerosene emulsion for fruit trees do you use the ordinary soap or whale-oil soap?

Prof. FLETCHER: The whale oil soap is better, but the ordinary soft soap will do as well. Whale oil soap is much more expensive, of course.

Mr. FISHER: May we expect to destroy the oyster-shell bark louse by using Paris green? I have had an experience which leads me to think so. I have an orchard of considerable extent, and I am not just prepared to explain just why it was that the bark louse appeared there, whether I starved it or was very careless with it or how it came about, but I was very much alarmed at the condition of the trees, and eight or ten years ago, when we commenced the use of the Paris green, it seemed as if the orchard would be destroyed by the bark louse, but shortly after we began to use the Paris green the lice began to disappear, and it may be that I was so fortunate as to use it just at the time that these lice were in their infancy and crawling about the limbs, and that the burning effect of the Paris green cauterized them or destroyed them.

Prof. FLETCHER: I think it is probable that at the time you used Paris green you also began to pay a good deal more attention to your orchard, and you cultivated it and paid more attention to keep it in condition. I think I may say unhesitatingly that Paris green would have no effect whatever on the oyster-shell bark louse, even on the small insects.

Mr. BOULTER: I showed you when you were at my orchard how we got rid of it with lye. Take an old broom that your wife throws away, and a little lye, and you will soon get rid of the bark louse. (Laughter.)

Mr. FISHER: May we always depend on Paris green to operate against the canker worm? At Burlington last summer we had a case on a large orchard—I think there are thirty-six trees in it—and the canker worm appeared there very numerous indeed, and the owner of the orchard took extraordinary pains to destroy them with Paris green, and although he had two pumps working there day after day continually, there were portions of that orchard that looked as if it had been under the influence of fire, and remained so till the second crop of leaves made their appearance.

Prof. FLETCHER: Certainly in treating the canker worm you can always rely on the Paris green doing its work, but the canker worm is one of those insects that hatches from the egg over a very extended period, and some will hatch at any rate over two weeks. Some batches of eggs laid some time before will hatch two or even three weeks after others, and the period is extended. I can only suggest, without knowing it, that after one of his sprayings these caterpillars hatched; or there was rain and that these caterpillars hatched afterwards; but certainly wherever it has been tried and the eggs had grown it has been efficacious. In Winnipeg last year it was one of their most serious enemies. I saw it in shade trees in the streets. It attacks the box elder or Manitoba maple. The remedy was effectual there. I can only suggest that in the case referred to it was raining up to the time the eggs were hatched.

PRUNING TREES—ESPECIALLY THE APPLES.

By W. S. Turner, Cornwall, Ont.

I have undertaken to introduce this topic more with the expectation of receiving than of imparting knowledge for, as I understand the art, pruning is practiced more with the idea of *guiding* and *directing*, rather than doing nature's handiwork in the growing of a beautiful and graceful tree.

Pruning should commence when the young plant comes from the nursery; one humorous writer has said it should commence at the first sprouting of the seed. Be that as it may, it is sufficient for our purpose that we start with the young tree from the nursery, and before a knife is used.

The form, habit, and nature of the tree must be first considered, as it is not desirable to check the natural inclinations of the tree too much. For instance, the Northern Spy, having an upright growth, should have a different training from the Fameuse, which is of a low, spreading habit. I would say then, commence with this requirement of the tree in view.

When the young tree is planted, see that all broken or damaged roots are neatly cut off, preserving as much as possible the fine roots. Cut the tops to three or four branches, if it is of a low growing habit, prune so as to have the topmost bud pointing upwards and outwards, if of a tall variety, have the topmost bud on the inner side of the tree, and then watch developments. Try and avoid forming a crotch; and the most important time to prevent this, is the first two or three years of the young tree's life.

If this is done, the pruning in following seasons will be simple and easy, as no large branches will have been permitted to grow out of their place.

Pruning large branches. A grower will hesitate before he cuts off very large branches, but when this is necessary, use a fine saw, cut part way through on the under side first; this will prevent the bark from tearing below the cut, trim off the cut and rough edges with a sharp knife, and give a coat of shellac, thick paint, or anything that will make it impervious to the weather. Care should be taken that the centre of the tree be not allowed to grow too close and thick, nor yet too much of a cup shape, as the latter plan would bring the weight of the fruit on the outside branches, on the other hand, the sun would he kept out, so the happy medium is necessary, and the grower will have to be governed to a great extent by the habit of the tree.

It is scarcely necessary here (only as a reminder) to speak of suckers and dead limbs; no thorough workman will have such a thing in his orchard.

At the Farmer's Institute meeting held in Cornwall, November 27th, 1894, the following question was put to Prof. Craig, the horticulturist, who was speaking on fruit growing: "Is a dead limb a greater drain on a tree than a live one?" The answer was, that, practically, it was a greater drawback to the tree, it was a lodging place for all kinds of destructive insects, the rot would also penetrate the tree, and eventually destroy it.

I will leave the pruning of small fruits and ornamental shrubs to those who are better qualified to deal with them than I am.

In pruning shade trees and fruit trees also, I would protest against the habit of leaving short stubs on the trees; cut close, and neat, having an eye to the symmetry and form of the tree, paint the cuts with some color that will be in harmony with the bark of the tree. I saw a large mountain-ash severely pruned the other day, and cuts painted a bright sky blue; this did not say much for the æsthetic taste of the proprietor.

I have endeavored in this short article to arouse in interest on this subject, and if I have succeeded, I shall be well repaid.

BULBS.

Rev. W. Bacon, of Orillia, read his paper on "Bulbs," as follows:

Allow me before I address myself more immediately to the subject assigned to me, to express my great appreciation of the honor done to our town by the visit of the esteemed members of the Ontario Fruit Growers' Association and its directors, who are doing so much to develop the best and most refining of our industries—industries in which artisan and millionaire alike may engage with pleasure and profit. Moreover, I would like to say that I regard it as a great honor to be associated in any way with them in this their annual gathering, though I fear my subject may not much interest them, or create in those who hear me, the enthusiasm I feel in it personally. I note with great pleasure the increased interest which you as a body are showing in the department of floriculture, and in this division of a horticulturist's pursuits and pleasures, the long-neglected race of bulbs is again engaging the attention of the greatest specialists and being introduced more fully to all classes than for many years; and I know of nothing in the world Flora more deserving of the admiration and attention of all classes than the multifarious species of this division of flowers.

In the time at my disposal I can only hope to deal with a limited number of many interesting varieties, which should engage one's thought and attention, and receive at our hands a fair trial, and give a few descriptive notes on each in passing.

Before I begin to enumerate these and attempt a description of them as far as I know them, it may be well to give a few hints, as to soil, nature and natural habitat.

To begin with: The conditions offered in any well-managed garden are well suited to bulbs in general; but the soil best adapted for the cultivation of bulbs is one of a light, sandy nature of good depth, and well enriched with thoroughly decomposed manure, resting on a well-drained subsoil. This latter point is not essential to all alike.

Amongst this class of plants are found many of our earliest popular spring flowers, such as snowdrop, crocus, squills, tulip, narcissus, etc., all of which have either fleshy underground stems called corms, or attenuated stems coated with thick fleshy scales. These possess one important character which is nearly universal amongst bulbs, namely, that during the winter and early spring months they are in active growth, and during the summer and fall they are in a dormant condition.

The practice of lifting the bulbs annually as soon as the leaves have died down, cannot in the case of many of them be denominatd a natural one, and when it has to be resorted to as a matter of necessity there are some points of precaution to be observed. First, before the bulbs are lifted be sure that the leaves have died away naturally, the strength of the bulb depending almost entirely on the complete development of the foliage. In the second place, when lifted, the bulbs should be well dried in their outer coverings before they are stored away in a perfectly dry, cool place; as dampness and heat are liable to exert their dormant energies and induce root development. Thirdly, they must be planted again before any root action has taken place, else serious detriment will ensue to both leaves and blossom.

Nature will teach us some of the best rules to follow and instruct in her economies. Under natural conditions we generally find that bulbous plants are associated with other plants; not infrequently do we find them growing in masses under the shades of trees, or along the margins of plantations and in the forest. Here you see in operation the much talked of doctrine of reciprocity. The periods of active and dormant life are admirably sustained by this provision of nature. In winter and spring when other forms of vegetable life are in a quiescent state the bulbs are making their best and most important growth; the leafless branches of the trees enable the rains and the melting snows to penetrate the ground and fertilize the bulb to the very stems; but see! as soon as these messengers of life from the apparent dead have presented in their turn spring greetings in gorgeous colors and delightful perfumes they bow their many-colored heads in a graceful adieu, and the new growth of surrounding herbage and the leafy canopy above provide that shade and dryness of soil which affords perfect rest. This is the most important stage in bulb culture. Here then you see nature's laws. These observations are applicable to almost all bulbous plants.

Let us take up a few of those that are equally good for house and garden growing, some of which are not generally known, or as much as they deserve to be.

Take up first the *Allium*. These are of very early culture and, being quite hardy, are as good for the garden as for the house and conservatory. They can be had in three distinct colors, pretty blue, soft yellow, and immaculate white. They continue to bloom in rich profusion from December to April. The flowers are borne on long, clean stems and much admired. Don't crush the stem or bloom or you will soon discover the family to which they belong. Very cheap. Plant six or ten in a pot.

Achimines must be mentioned as one of the beautiful gesnerads with a pretty trumpet-shaped flower and bronzed leaf. A continuous blooming plant, lasting for weeks in the summer season. Well suited to greenhouse and conservatory. Start them in March. A gem of a thing for wire hanging-basket. Easy to manage and inexpensive. Introduced from Mexico about 1544.

I will now speak of the *Amaryllis*. Congenial conditions of climate and soil produce magnificent flowers of large size of what is known in the West Indies as the Barbadoes "Spice Lily." These royal beauties are amongst the most gorgeous bulbous plants grown. Their immense flowers and richness of coloring are simply imcomparable. The bulbs are large, 7 to 16 inches in circumference and produce with great certainty majestic spikes of bloom from 18 inches to three feet high, bearing enormous trumpet-shaped flowers, averaging 6 to 10 inches across, of great substance, of rich and glowing scarlet, intensified by contrasting with the wide white stripe through each petal. When in bloom in winter and spring months no flower can approach their beauty. Each spike bears 4 to 8 blooms. Old bulbs two and three spikes in a season. A splendid plant for the house and window garden.

The *Formossissima* or Jacobean Lily, a quaintly-shaped beautiful flower or this species grows well in water like the hyacinth, or in spring, can be planted out of doors where it will bloom well. Of a dark red color.

The *Belladonna Major*, a fall blooming variety of extreme beauty and great fragrance. Large spikes 2 feet high bearing from 6 to 12 beautiful flowers, sweet as violets, white suffused with pink. A garden gem.

Then there are of less importance Amaryllis, *Atamasco*, *candida*, *rosea*, *Zephyranthes*, Sarniensis and purpurea or Vallota and Leopoldii. These plants are natives of South America and should therefore always be planted in a sheltered position after all danger of frost is over. Not particular as to soil, only that it should be well worked up and manured.

Alströemeria. Here is a genus little grown containing many charming species. They produce fleshy, tuberous roots, which, being somewhat tender, should be planted at least 8 inches below the surface, in deep soil of loose character. Don't disturb them very often. Aurantiaca is a very fine yellow, producing its blooms in July and August. Brought from Chili, 1831.

Anomatheca is a dwarf-growing plant belonging to the Iris family. The corms and leaves are those of a diminutive gladiolus. Flowers blood-red, produced in August and September. 9 inches high. Plant it pretty deep and it will thrive well in any light garden soil. South Africa, 1830.

Brodiœa, *grandiflora* and *coccinea* are very handsome, bulbous plants with somewhat long leaves deeply cut, and erect flower scapes, bearing at the top an umbel of drooping tubular, scarlet flowers, the ends of the perianth segments tipped with green. They are very showy and distinct and bloom in September. California, 1870.

Anemones. The anemones has long been a favorite flower in our gardens, and with the florist especially it has proved one of those subjects on which he has bestowed great pains in the direction of its improvement. Years ago in the old land it was much esteemed as an exhibition plant, but its cultivation has declined of late, not because it has lost any of its decorative value or beauty, but in consequence of the introduction of other popular plants to general cultivation. There are two sections, the double-flowered and the single-flowered, which with care will bear our climate, with protection, excepting when we have seasons of unusual severity. Roots planted in October flower in May. Those planted in January about June. They can be had in almost every color and are very desirable. Plant in ordinary gritty soil with vegetable manure. Cover 3 or 4 inches deep with half-rotted leaves to protect from the frost. When buds appear in the spring apply a top dressing and water freely. Apennina, Joan of Arc, Ceresè primo, Eugenia are among the best colors.

The Crocus, Elwes' Giant Snowdrop, and *Chiondoxa* (or Glory of the Snow,) *Camassia*, or Quamash of the Indians, with *Ixeas*, *Sparaxis*, *Scillas*, *Ranunculus*, all perfectly hardy, dwarf-growing, beautiful, early spring flowers, too well known to need further mention, should be more largely grown than they are in clumps anywhere almost, but more especially as a first border plant next to walks. The Lily of the Valley also, should not be so generally neglected as it is.

Then come the taller-growing varieties of bulbs for the next line in the border.

The *Ornithogalum*. A beautiful growing variety throwing up large spikes of white flowers, star-shaped with a black centre, having a very distinct perfume. Equally good for greenhouse and window culture; easy to manage.

Next we may mention the *Jonquils* the Daffodils, the Narcissis, Polyanthuses, etc.

Dutch Hyacinth, single and double.—These naturally fall into the next line and are exceedingly fine with their large trumpet-shaped flowers—smaller ditto, some with two colors, some with only one, some single and others double, delicately scented and a joy for ever.

Shall we pass by the lovely Iris with all its pencilled, flaky grandeur inviting us to stay and take a little pleasure? We cannot forego the enchanting scene of these flower-winged beauties They are among the loveliest flowers in the world. There are many types of the English, the German, and the Japanese. Some grow but about 12 inches high, some 18 inches. Anglica, Bakeri alata, Peacock and Florentina are amongst the best, but *Iris Loretti*, a native of Palestine, is the finest perhaps in the world. Coloring very fine. The drop petals show a creamy ground color, dotted with crimson—purple spots with richly colored veins centering into a dark crimson—purple signal. The uprights are nearly pure white, marked with pencillings of violet lines. A very vivid red-yellow tinting of the styles gives by reflex a reddish lustre to the standards. A charming thing.

Japanese. But of course, the Japanese imported hybrids will now be specially popular, as they well merit. In doubles and singles their magnificence surpasses description by me. Enormous in size, measuring 8 to 10 inches across, and of charming pencillings and tintings—one color being suffused with another throughout, like the blendings of the rainbow. They are very hardy and attain perfection in a moist soil and will glorify your gardens in July and August.

Next in order are the matchless Lilies, in our hardy bulbous plants, for their lovely form and delicate colors. You may have them flowering from May till September and they cannot be overrated to mix up with Pœonies, single and double, Japanese and others.

Chief and best of them are: Madonna Lily (or Candida) white; Canadense, yellow spotted; Red C Flavum, delicately scented, pure yellow; C. Rubrum, red, darker spots; Calcedonicum, etc., upturned.

For greenhouse cultivation and window decoration: L. Harrissi, L. auratum, L. longiflorum, L. Krameri, L. speciosum, rosa, rubrum.

TULIPS AND HYACINTHS. For spring bulbs for massing in beds no class equals the Tulip and the Dutch Hyacinth. Circular beds look best in quarter sections, of solid color; oblong beds in lines of distinct shades and markings; clumps in general mixtures. These should be planted in our rigorous climate, at least 4 or 5 inches deep.

Of Dutch Hyacinths, closely planted, a pretty circular bed can be had with lines of white, pink, blue—in their various shades. Plant in a sunny position at least 5 inches below the surface. Scatter litter over the bed in early spring, after the snow has left, to prevent harm from frost damaging the early budding plant.

These all with Roman-grown Pink, Dutch-grown White Roman, pink and blue, can be had in bloom in pots for the window and conservatory from December till June. Drain the pots well 1 inch, keep on hand a supply of soft wood charcoal, place this next the drainage, in pieces as big as walnuts, placing the bulb in compost made of decayed turves, a pinch of leaf mould, not too much well-rotted cow manure, leaving the point of the bulb well above the soil. Put in a dark, cool place till the growth of 1 to 2 inches, then gradually bring to the light. Keep moist always. Tulips same treatment. Miscellaneous bulbs of exquisite beauty and fragrance for house cultivation made be tested almost *ad infinitum*, but we cannot forget the delightfully fragrant Freezia, white and golden. Grown much in the same way (10 in a 4 in. pot) as indicated for the Tulip and Hyacinths.

Oxalis. Still another little dainty thing so easy of growth and luxuriant in foliage, as the Oxalis, claims our notice. For a small table plant for the supper and dining room centre-piece can rarely be had with the same grace, compactness and beauty as this in white, blue and golden, small; and the new Bermuda, a perfect gem in yellow, large and fragrant. These with me are great personal favorites. They are very cheap and multiply rapidly. Thrive in any ordinary soil, rich and free. With good cultivation the German hybridist at work in Bermuda tells us that single bulbs have produced 75 stems at a time bearing over 1,000 blooms in one season. Try it and you will be pleased.

Nerine. Again, don't be shy of the "Nerine" of Guernsey Lilies, the Crimson Kirkii and Americana.

Cyclamen, or "*Alpina Asperule*" is a most beautiful and highly interesting winter and spring flowering bulb equally well suited to the window and greenhouse. Flowers are unique and foliage very ornamental, making it a splendid decorative plant. This family have of late years been very much improved, so much so that the small comparatively insignificant blooms that used to be met with bear no comparison with the splendid large, broad-petalled, distinctly-colored forms of this flower now so plentiful! This change has been effected through the perseverance of a few of the London florists (now taken up by the Germans) who, raising new varieties and studying the nature of the plants, adopted an entirely new course of treatment from the old practitioners who periodically dried of the corms almost to complete softness. I have made a specialty of growing these plants for 6 years in the latest improved strains, the Giganteum and Grandiflorum particularly, and from the testimony of others, with measurable success, and I know of no medium-sized plant that will add so much to the floral display all through the winter as the Cyclamen, when well managed. To obtain the best seed from originators one has in the business to pay as high as 2c. per seed, and we had the readiest sale to dealers of our own seed product at 1c. per seed. Innumerable shades are now obtainable and blooms of great breadth and substance, the petals sometimes measuring 2½ inches deep. Seed sown in 1892 produced for us two decided novelties, one a pure white with a fragrance stronger and much more pleasant than that of the Sacred Lily, the other being intensely deep red with two-thirds black in color. We had also 5 or 6 plants with 9 and 10 petals. Our best specimen without extraordinary means carried, as near as could be counted, 225 blooms and buds at once, this being the largest one year old plant I ever saw.

The best time to sow the seed according to my experience is in October. Ordinary seed-boxes should be prepared by draining them and filling them with an equal mixture of turf loam and leaf mould well baked, a little sand being added ; slightly cover the seed and put the boxes in a temperature of 50° and as soon as the seed appears put them near the glass to prevent them being drawn. When large enough to handle pick them out into larger boxes similarly prepared about 2 inches apart and keep them during the winter in a similar temperature and position. In the spring put into 3 or 4-in. pots, and as the days increase their length shade them from the sun's bright rays, as they cannot stand its full force. Pursue the same course till in their flowering pot, watering and attentively giving them air. In potting do not cover more than the lower half of the corm with soil, if you do trouble will follow. In the summer time they like a not over strong shower bath occasionally. This will help to keep down *their enemies* the *red spider*, *thrips* and *green fly*. If these are allowed to continue their ravages the plant cannot make good progress. To flower them satisfactorily they must be kept hustling without a thing to check them. In the fall give them full light in an open space, give plenty of air at a temperature of 50° and your pains will be amply rewarded

You will get a few blooms in November and they will continue increasing in number and size till February and March, when they should be in their full glory. After this their striking distinct color fades somewhat and in summer they will begin to tell you they want to rest, when they should be put in a shady position and water partially withheld, but do not dry them up as they did in the years gone by, little knowing their requirements at such a time. In the fall, again move into the larger pots, shaking some of the old soil from them, using similar soil to that before recommended and continue to care for them as heretofore. They will this season bloom much earlier and make fine displays, though the individual blooms may not be quite so large. The plants will live for years, but three years is long enough to keep them, younger stock being preferable. Don't fail to grow at least a few.

Gloxinia. To return to this family. If we take into account their neat habit of growth, their distinctness, their continuous flowering habit, the exquisitely gorgeous colors they possess, and the ease with which they can be grown it will easily be seen that there are few warmth loving subjects so well deserving of attention as the Gloxinias, which represent a genus of gesneraceous plants from the originals of which, imported from the warm regions of South America, have sprung the large family of charming hybrids now in existence. They flower continuously during the spring and summer, and are invaluable for decorative purposes; the blooms are also frequently used for cutting. They can be easily raised from seed sown in good time in the spring, following precisely the methods as with Cyclamen, only that they must have a temperature 60° to 65°, just keeping the soil nicely damp.

The methods of propagation we cannot stop here to go into.

We have also as a specialty of the family about 200 of Nægelia grandiflora, Longiflorum alba, which is a delicately scented blooming plant bearing its pure white flowers in pairs on stiff reddish stems about 15 inches high, each stem producing from 6 to 10 blooms. It is in its best condition about August to November and is very simple in its requirements. This I expect I have disposed of to an ever wide-awake Scotchman who like his fellow clansmen usually knows a good thing when he sees it.

Your patience, I am sure, will by this time be exhausted and I feel very much indebted to you listening so patiently to the crude thoughts of one who classes himself a novice amongst the novices in the presence of so many distinguished professors, specialists and learned gentlemen.

That you may not think I have no appreciation of the many beauties and merits of the lovely Gladioli, Lemonie's and others, I would say each year seems to bring fresh revelation of charming blooms having rich suffusions of colorings and markings that surprise me. They are so cheap too that all should grow them.

After some discussion upon Mr. BACON's paper it was decided to change the programme in order to allow time for the drive and visit to the asylum on the morrow.

The PRESIDENT therefore called upon Mr. Caston to briefly deal with the question

HARDY FRUITS FOR NORTH SIMCOE.

Mr. G. C. CASTON, of Craighurst, said: I don't know whether it requires altogether hardy fruits for North Simcoe after what we have heard about the Beaver Valley and about peaches growing around Collingwood, and after seeing the specimens of fruit which have been shown here. I might first mention the interesting fact that this is the oldest agricultural and fruit growing section in Canada. Agriculture was carried on to a certain extent here two hundred and seventy or three hundred years ago, and the first fruit planting was done here at that time. We learned from Parkman's "Jesuits in North America" that this part of Canada was the home of the Huron Indians—the only Indians inhabiting North America who practised agriculture—and in clearing up this country we have evidence of the old corn hills--they grew Indian corn—and at that time there were 20,000 inhabitants of these Huron Indians in the county of Simcoe, while the Niagara Peninsula was inhabited by the Iroquois that were constantly at war with the other tribes. That may account for the savage nature of some of those inhabitants. At that time a number of plum seeds and other fruit were planted by the Jesuits around the shores of the Georgian Bay, and anyone who travels by stage from Parry Sound to Burk's Falls will find a number of those plum trees growing there yet —not the original ones, but ones that have sprung from them ; they have perpetuated their species. While in Parry Sound I was shown a sample of plums that were grown on some of these wild plum trees, and they are a good deal better in quality than some of the plums we are importing now from other countries and trying to grow as hardy plums. The planting of those seeds three hundred years ago was the first planting that was ever done in Canada. There has been a common idea that we could not grow anything up here except the Siberian Crab or a seedling apple ; and I just want to mention a few varieties that succeeded well here, and if I had time I could show you that we can grow any apple in this county that can be grown anywhere else in Ontario—(hear, hear)—and we can grow apples in this county in certain varieties that will challenge comparison with the best apples in the world. (Hear, hear and applause.) I have an apple here from the village of Stayner, that Mr. Pettit, the World's Fair Commissioner, thinks is a Newton Pippin. In the Liverpool market that apple is sold for three times the price of any apple that grows there. (The specimen was cut up and passed round.)

Mr. Caston : Here is another apple handed me by Mr. George Street, west of Woodburn, on the shores of Kempenfelt Bay, and he calls it the Beauty of Kent ; it is of high quality as a dessert apple. In picking nearly a thousand barrels this year, my pickers found only one barrel in the whole to discard. Here is another apple that we have heard a good deal about of late years—the Blenheim Orange. A gentleman living out on the Orillia Road has an orchard of them doing well and bearing well for a number of years. It may not be of very high quality, but it is a very handsome apple, and entirely free from the attacks of the fungus, and it is of even size. It is an apple that would be of great commercial value. This sample was grown at Craighurst. Here is an apple that is going to be a valuable one for this part of the country. It is called the Mann. I think they are pretty near as good an apple as the Greening. They keep well and bear well, are not subject to many of the diseases, and are hardy. Then here is another apple I picked a good many of this fall—the Fallawater. It is a splendid cooker, keeps well, looks splendid in the barrel, free from fungus scab, and is altogether a valuable variety. I have the King of Tompkins, and there is now hardly a living tree ; it is too delicate for this section ; but by top-grafting it on some hardy stock you can keep it. I have been experimenting along that line for some years, and here is the result of some experiments. We have heard a good deal of the influence of the stock on the graft. Now, these have been grown on a sour seedling. I would like the experts to say whether there is any difference in the flavor of this King, and one grown on its own stock. (Samples distributed.)

Mr. Morton : There is a distinct difference in the flavor. The larger one has a great deal more of that aromatic flavor that is peculiar to the King. I can distinguish it in the smaller apple, but it is less distinct.

Mr. Caston : We can grow any apple that can be grown anywhere by grafting it on a hardy stock. I have another apple called the Gideon. The tree of that is one of the healthiest growing trees I know of. It has the healthiest foliage, a nice smooth, bark and dark, rich green foliage peculiar to these trees. It is not affected by the scab at all either in the foliage or in the fruit. It is a very handsome apple where the tree is kept properly pruned, for it has a nice red cheek on it. I have merely touched upon some of these fruits that we are able to grow in this section.

Mr. A. M. Smith moved that the papers which have been crowded out for lack of time be considered as read and incorporated in our report.

Mr. McNeill seconded the motion, which was carried.

Mr. BEADLE read a series of resolutions of thanks, which Mr. Race seconded and which were carried unanimously.

Mr. WHYTE said : I am sure we would all listen to Mr. Race for ten or fifteen minutes on the subject of Roses for Out-Door Culture.

Prof. CRAIG : There was a special question as regard to that subject.

The PRESIDENT took the sense of the meeting, and it was decided to hear Mr. Race.

ROSES FOR OUT-DOOR CULTURE.

Mr. T. H. RACE said : At the outset I wish to state that there is a mistaken idea in regard to the trouble of perpetuating the rose. There would be no difficulty in growing and very handsomely blooming the rose in this town. When I bought my present premises in Mitchell twelve years ago, a lady quite distinguished in floriculture said it was impossible to grow roses there, but I said to her just this, "It has been written by a man before our day, that in order to have a beautiful rose in your garden it is first necessary that you should have a beautiful rose in your heart." Now, I leave it to any lady or gentleman here if love will not remove any obstacle that has ever presented itself in this world—not only the love of man for a woman, but love for a rose. If you have a rose in your heart you will overcome every obstacle and produce a beautiful rose in your garden. There is no more trouble in raising roses than any other house plant. I am not going into the varieties of roses that I have, because I must have one hundred and twenty or one hundred and thirty varieties in my garden, but I should like to have said something about the social, moral and religious influences of the rose and all other things. I don't spend any time at all in the house during the summer time. I go out into my lawn with my papers and my books and sit down there with my roses round me, and I never feel alone, because there is society for me in the roses. If you wish to start with a few roses, the first I would mention is the General Jacqueminot. It is a little loose in its make-up. The color is everything you can desire. The growth of the plant is very rank. The formation of the rose is a little bit loose unless you keep the plant very richly manured and well pruned back. It is a rank and rampant grower. You can give it all the growth that it will take, but prune it down well in the spring if you want it to bloom well and form well. You can prune it down so well that it will produce very handsome blooms and any amount of them. There are a great many varieties of dark-colored roses very similar to that one. If you wish another take the Fisher Holmes ; but if you wish to take half a dozen dark roses, take that half dozen in the General Jacqueminot. Now, for a white rose take the Madame Plantier. It has one fault—it has only one season for blooming. and that a rather brief one, but it is a beautiful rose for the time that it lasts, and it is no trouble to cultivate. Prune that down well and it will give you a very heavy mass of bloom. Now, in order to make up nice bouquets, you want a perpetual White Moss. That is a rose that you can grow anywhere and that will sucker ; if you get one plant of it you will have any amount of plants in a year or two to distribute among your neighbors. The perpetual White Moss rose is perpetual only in one sense—that it is perpetually out of bloom. (Laughter.) You cannot get it to open out except under very exceptional conditions ; but you don't want it to open out. It is a very rampant grower. Prune it down well in the spring and it will give you just a solid mass of the most beautiful buds that you desire, and very heavily mossed ; and it is only for the buds that you want that rose in making up your bouquet. Now you want another one, and take the Glory of the Mosses. I would just as soon have an old common English or Irish rose as any other, but it is not such a rampant grower as the Glory of the Mosses, so I will give you that one. That gives you four roses, and with those you can very well afford to start, and I know that you will be pleased with those. Now, all they want is a good, loose soil, clay loam and plenty of manure, nicely protected in the winter time.. If you have plenty snow here just allow the snow to press around them, because there is no better protection than snow drift ; but if you have not plenty of snow bend them over and cover them with leaves or clean straw, and then in the spring prune them down well, and you will have no difficulty. Now, I will add another one, rather pinkish rose, that is the Magna Charta, a most beautiful English rose, a heavy bloomer. It has the same fault as Madame Plantier, that it has a short season, but it is a magnificent bloomer forth the time it does bloom. However, if after the first blooming season you trim it down well, cut out all the old stocks, manure it well, and allow the young shoots to grow up, and it will give you a second blooming season. In August, this year, I had nearly all my magnificent Charta bushes in heavy bloom, and you can get very nice blooms in that way. That is quite enough for you to begin with. General Jack will give you bloom throughout the season, even up to the time the snow falls. With regard to the care, you don't require to do anything with your roses except to spray them occasionally with Paris green water, not as strong as you would use for other plants. I don't know whether the Bordeaux mixture does any service at all to the rose, but this I am sure of, that the lime in that mixture would destroy the foliage, and I place a great deal of value on the foliage of the rose bush as well as the rose itself; and the Paris green leaves no injurious effect, no blemish on the leaf. Now, if you have mildew—I may say that there is such a thing as mildew of the rose if you plant your roses in a soggy soil or in a partially shaded position—the Bordeaux mixture would probably do something as a preventive for that, but there is a better one. Get your roses out of that position, for they have no business there Never plant them in a soggy soil, and if you don't do that you will not have mildew. You want to have your roses in a porous soil; keep it nice and clean; give it plenty of sunlight and air, and you will not be troubled with mildew, therefore you will not need any such fungicide as that; and treat it as I have stated with a little Paris green several times during the summer and that is about all the care that your roses will require, and I know that if you do that you will be delighted with the results. (Applause.)

A Delegate: About what quantity of Paris green do you put to a gallon of water?

Mr. Race: I put two teaspoonfuls to an ordinary pailful of water—not heaping teaspoons, just a teaspoon level full.

Prof. Fletcher: I would like to protest against that measure of a teaspoon. The teaspoon may vary all the way from one third of an ounce to over an ounce, that is by actual measurement in weight. On one occasion I went into the laboratory where some of the officers of our farm get their lunch, and I collected all their teaspoons, and the extent of difference from the largest to the smallest was from one third of an ounce to an ounce. An ounce of Paris green is a large quantity, as you will find if you measure it up. Mr. Race mentioned an enormously strong mixture for roses or anything else. That is strong enough for potatoes. I think it would be better for you to go to your chemist and ask for a quarter of an ounce to be measured up by their delicate scales. A quarter of an ounce would be certainly enough for three gallons of water on roses for the saw-fly larvæ.

Mr. Race: I use a small teaspoon and I simply level it.

Prof. Fletcher: These rule-of-thumb measures are very dangerous and give us a great deal of trouble.

Mr. Race: I wonder if there are any ladies in this town who are trying to cultivate the rose in the house? I would advise them to put those roses right out-doors into a nice soil in the summer time, and they will be more pleased with them there than almost any other plant they can put there, and they will bloom almost constantly during the summer time. In the fall cover them up with leaves and let them stay outside all winter. The foliage will die and blacken, but the root will be quite healthy in the spring, and as soon as the season opens they will sprout up again and give you constant bloom. Two weeks ago last Monday I went into my own garden and picked a very large bouquet of that variety of roses after the first heavy snowfall. I mention this simply to show that the house rose will bloom up to the time that the snow buries them.

Mr. Fowlie, President of the Orillia Horticultural Society, was called to the platform, and assured the delegates of the pleasure with which they had been welcomed to the town, and the profit that had been received from the meetings. On behalf of the local society, he tendered their thanks to the Association for accepting their invitation, and he hoped it would be only a short time before they would return. (Applause.)

RESOLUTIONS.

The following resolutions were brought in by the Committee on Resolutions, and were heartily passed by the Association.

PROFESSOR PANTON'S LECTURE.

Resolved, That the thanks of the Association be given to Professor Panton for his very valuable and instructive lecture on the fungi. We desire to express to him our grateful appreciation of the great kindness shown to us by him in coming to our meeting and entertaining us for an hour at so great inconvenience and with such entire self-forgetfulness.

EXPERIMENT STATIONS.

Whereas, The Board of Control of Experimental Fruit Stations for the Province of Ontario have selected experiment stations with experimenters as follows: at Trenton, W. H. Dempsey, experimenter; Craighurst, G. C. Caston, experimenter; Winona, M. Pettit, experimenter; Leamington, W. W. Hilborn, experimenter, and whereas the appointment of experimenters is subject to the approval of this board,

Resolved, That this Board of Directors approve of such appointments.

MR. PATTULLO.

Resolved, That the thanks of this meeting be given to Mr. Pattullo, of Woodstock, for his generous response to our request, and for his able and interesting address on the very important subject of good roads. We desire also to express our sympathy with him in his efforts to secure this great boon, so essential to the best interests, economical, social and ethical of our rural population.

HIS WORSHIP, THE MAYOR.

Resolved, That the thanks of this Association be tendered to His Worship the Mayor, and to the citizens of Orillia and vicinity for the very courteous welcome given to us, and for the great interest shown by them in the work of the Association, as manifested in the exceedingly beautiful and creditable display of the winter fruits of this region, and by the magnificent entertainment provided for our evening meeting.

ORILLIA HORTICULTURAL SOCIETY.

Resolved, That the thanks of this Association be tendered to the President, Secretary and members of the Orillia Horticultural Society for the hearty and courteous reception accorded to us by them, and for the great trouble taken by them to render our meetings a success. And the Association desires to express its satisfaction at the highly intelligent interest taken in horticulture by the people of Orillia and vicinity, which is largely due to the fact of their having such an excellent organization in their midst.

PRESS.

Resolved, That this Association desires to express its appreciation of the press of Orillia in co-operating to make our meeting a success by its judicious and kindly notices, and also in extending the usefulness of these meetings by its concise reports; and we also take the opportunity to thank the Press of Ontario in general for its unvarying courtesy towards our Association.

The proceedings were closed by the meeting singing the National Anthem.

VISIT TO THE ASYLUM FOR IDIOTS.

On Friday morning the delegates were driven to the Asylum for Idiots under the escort of a deputation from the municipal council of Orillia, accompanied by the editors of local journals and other prominent citizens. The visit to the various departments of the institution was most interesting and instructive, and the impression left upon the minds of all the delegates was one of gratitude that those mentally afflicted were in charge of such able and enthusiastic instructors and managers as Dr. Beaton, Miss Christie, Miss Lafferty and others.

Luncheon was provided at the conclusion of the visit of inspection, and at its close short addresses were delivered.

APPENDIX I.

THE PACKING AND MARKETING OF PEACHES.

By W. Boulter, Picton, Ont.

In taking up and endeavoring to solve one of the difficult problems of my subject will try and handle it from both the standpoint of seller and buyer. In first place the peach growers of Ontario had a bountiful crop the past season, probably never equalled in any previous year, while our neighbors at the south of as had a very poor crop, and we saw what not usually happens, "Canadian peaches" finding their way in considerable quantities into the "American" markets. We understand they enter there duty free now, which was no doubt very beneficial to our growers here, leaving our neighbors over there to candidly judge of the benefits of "Free Trade *vs.* McKinleyism" in the peach trade. I have started a large canning factory in Toronto this year, and in doing so I wished to be in a favorable position as to locality to obtain peaches, and also pears, plums, and other fruits, which are sent in such large quantities to market here, and to be able to compete with California fruits. At the revision of our Canadian tariff last session of Dominion Parliament the Government—for what reason none of us engaged in the fruit packing, as well as the growers can conceive of, as they claimed to make a farmers' tariff—reduced the tariff on canned fruits and vegetables, thus allowing California peaches which as you all know are grown in abundance there to be brought in here, thus making a slaughter market of their goods here. Our own Canadian peaches, I believe, are equal if not superior in flavor of any grown on the continent, and we had virtually driven California peaches out of the market. We with other packers determined to hold our trade if possible, knowing we had a favorable climate for fully maturing the fruit. We placed ourselves in communication with the largest commission houses in Toronto to supply us and to send us only the choicest fruit from our best growers. As soon as the fall peaches came on we commenced receiving them, but must say we could depend upon getting scarcely any uniform peaches, the tops of the baskets being faced beautifully while the centre and the bottom would be filled up with small and worthless stuff, such as windfalls, clingstones, etc., and we very seldom could get them to run uniformly. We called our commission men's attention to the fact—who, mind you, had promised to supply us only with first-class fruit and to take back what was worthless. So confident were they that they could control their packers—they repeatedly wrote expostulating in strongest terms, still the peaches would come on very little better. Knowing some of the growers personally I wrote them of the facts, and all the satisfaction I could receive was the proverbial "hired men would not do as they were told." We were obliged to put up a large portion of them in what is called "Pie Fruit," and sell for what we could get. I also saw thousands of baskets shipped off by express to different parts of Canada, and personally I know these caused much dissatisfaction by reason of the way they were packed, and prices as growers well know, dropped away down, and our fine crop of peaches did not bring to the growers as much as they should. This has been my experience as a buyer. I am also a large grower of fruits on my farm in Prince Edward county, and know that those engaged in fruit growing after years of waiting look for some returns for their expense, and know also that it is not pleasant after getting a good crop to have to sell it as it were at a sacrifice; but I wish to impress on growers who perhaps feel annoyed at the commission men they have sent their fruits to, and feel that they have been imposed upon, that I do not think this will be borne out on investigation, as the commission man depends upon his sales for his living, and endeavors I believe to get for his customers all they can. The old law of supply and demand and quality must rule in all cases. And when growers will persist in mixing up the good with the bad, the small with the large, they must expect poor results. First pack your peaches, if possible, uniform in baskets, and discard those baskets with thick wooden bottoms that weigh from three-quarters to one pound more than those not having them. Also put only your choicest together, commencing at the bottom of the basket and so on to the top. *Pack each variety* *by itself.* Don't put in a few "clingstones" with good kinds just to work them off. Also put your seconds uniformly in size by themselves, using all the care possible and cover nicely putting your name in each basket. Now you will soon be surprised how prices will jump up for such peaches. But you will say it would be labor lost, if all did not follow this rule. I say "No," emphatically. Nothing will pay you so well as to put up your peaches first-class. Recollect as growers you have a heavy protective duty of one cent per pound on fruit and on the basket, which is the highest duty per cent. I know of. So unless more care is taken by growers you may find some day not far distant this duty may be reduced materially There is very little area in Canada for peach growing, as you all know that east of Hamilton very few if any are grown. Thus the demand for this luscious fruit can always be maintained, and, it more care is only used in marketing it, the result will be a better remuneration for your labors and it will be a pleasure for your commission men to handle them. Look at our Canadian apples and the high reputation they have in England and over the whole world. It is by our buyers insisting on packing only the choicest fruit possible, discarding all small and worthless ones. Now I have not a doubt but that there are as honest peach growers as in any other business, and I do not wish to cast any reflection on those, but, if possible, to strengthen and uphold them in their endeavars to put up only first-class goods; and I trust if we have another favorable year that our growers will use more care. I candidly say from years of experience in buying fruits that we can produce as fine flavored fruit, and even better than I have bought from our neighbors south of us. Let your motto be "to excel," and always bear in mind when packing your peaches they shall be put up right, and to recollect how you personally would feel if, like the mechanic who buys a basket to carry home to the good wife to put up, you found on opening them that one-half were worthless. What would you expect him to say?

BEE-KEEPING AND HORTICULTURE.

By J. R. Howell, Brantford, Ont.

The true horticulturist, like the successful bee-keeper, is an enthusiast. I need not remind any, who plant trees and grow fruits, of the genuine pleasure that thrills the soul when nature responds to his intelligence, thought and careful direction. But after all man's skill in planting, after ransacking the earth for improved varieties, after propagating, grafting and hybridizing, he must rely mainly on nature's methods of fructification. The favoring winds and industrious bees are needed to fertilize the bloom to insure a harvest of fruit. As a means of accomplishing this end, there is no question that the bee is of great service to the grower of fruits. Observant horticulturists have estimated that our fruit crop is increased one-third by the cross-fertilization of flowers by the honey bees. No other insect is multiplied in such vast numbers so early in the spring when their agency is so much needed to fertilize the orchards and small fruits. If the winds were the only means of carrying the pollen from flower to flower, how often would perfect fertilization fail from too much, or too little, wind during the brief period when the bursting buds are sighing for the life-giving dust from the neighboring flowers? Not only is honey provided in the delicate flowers to entice the bees, but the pollen so essential to the plant (and just as essential to the bee in furnishing the proper food for its young), is placed in close proximity to the nectar, so that in getting the latter the bee is unwittingly carrying the dust from flower to flower, working out the wise plans of Providence as relates to plants. The drop of honey is placed in the flower not because it is needed to perfect the flower or fruit, but to tempt the bee to brush her hairy legs against her anthers, and distribute the golden dust. So the bee introduces itself at once to the horticulturist as his friend. What then is there to hinder these two vocations from going hand-in-hand since each is helpful to the other? They ought at least to be on friendly terms. And now, in conclusion, my horticultural friends, remember that the busy little bee is your friend and co-worker. She multiplies your fruits, she gathers the richest of nectar to tickle our palates and soothe our lungs. She toileth early and late; and at the close of her brief but useful life she asks neither grave nor monument.

THE VEGETABLE GARDEN.

By W. Warnock, Goderich.

Where circumstances permit a choice situation a garden ought to be as fully as possible exposed to the rays of the sun, and in Ontario, or this latitude, a gentle slope to the south, southeast or southwest is preferred to a level surface ; but a slope to the north is by all means to be avoided ; a deep rich and easily penetrable soil is desirable and the soil should be three feet deep for the best results. It is often important to trench to get a uniform depth of soil, and it should be plowed or dug in the fall. A liberal supply of manure is necessary for a garden ; the kinds of manure must be accommodated to the soil and to the different plants, and often depends in part on other circumstances. Care must be taken not to overdose with guano or indeed with strong manure of any kind, by which plants might be killed rather than nourished. Care should be taken that each crop is succeeded by one of a completely different kind, a rule which is indeed always, as far as possible, to be observed both in horticulture and agriculture. It is also of great consequence to have the means of irrigation, or at least of abundant watering, which even where the climate is generally moist greatly tends to increase the produce in dry seasons, and is almost always necessary to the perfection of certain crops. This use of water is far from being so common as it might be in Ontario gardens. I will make one reference to manure and its effects on soil to get the best returns ; we will give requirements for tomato culture as this is one of the most important vegetables we should cultivate. It needs a quick fertilizer ; it is a gross feeder ; to prevent it from growing too much to vine and ripening a small crop late in the season, the best conditions for an abundant and early ripened crop is to plant on a sandy loam, made rich through previous manuring for other crops of vegetables. Work it two or three times before planting time, then just before planting sow broadcast nitrate of soda at the rate of six or seven hundred pounds per acre, plant only good stocky plants, work the soil often, once a week at least, and you may expect a good crop, ripening early. Do not under any circumstances apply a fertilizer that is slow in giving up its substance. Fertilizers applied late, or which give up their substance late, give poor results because they delay fruitfulness and the plant is overtaken by frost before it yields a satisfactory crop. Nitrate of soda applied at one time early in the season gives a much heavier yield than the same amount applied at intervals. Now we can easily see a reason for treating some plants different from others with respect to fertilizing the soil. The tomato, if cultivated properly, commences to give up its fruits long before its season is over, hence the need of a quick fertilizer ; whereas the turnip, carrot, and potato continue to require a greater amount of plant food to the end of their season. The strongest point in horticulture and gardening is the man, he is the main factor, the one that needs to rise above his association. He must be a close observer of facts and results, able to trace cause to effect and effect to cause ; he must read as well as think and that carefully ; he must learn how to propagate, how to cultivate and how to fertilize ; he must learn how to combat the army of insects that prey upon many of our most useful garden vegetables, etc. Take man out of horticulture and gardening and it will return to where he first picked it up, to the wilds and jungles of nature, where he had to find it, after he had been turned out of the garden God placed him in at first. A lengthy description of how to plant, cultivate and fertilize even a few of the many useful vegetables would be out of place in this paper, for there is a number of valuable books published on gardening and all who wish to improve their knowledge in this line can avail themselves of this opportunity. The chief obligation resting on us as horticulturists is to impress on all the importance of having their vegetable garden as well as some plants and trees for their attractive beauty, for there is through the farming community a great many that feel they have no time to attend to a garden and are deprived of the great benefit of a varied vegetable supply of food, and in the towns and villages and even the cities there are many that can have a supply of vegetables in their season if they would only try. Now I will show what a man can have if he has only two square rods of land suitable for vegetables. Here he can have a nice supply for a small family, of rhubarb, beets, and parsnips. Here are only three varieties of vegetables and not comparing them with the potato they are in my opinion the very best collection you can plant in your small plot. The great point in their favor is that no insect pests trouble them. Rhubarb requires very little care and is both fruit and vegetable. It is the first thing in the spring and remains all summer. A great many do not know the value of beets. The young plants require to be taken out of the bed in thinning to a proper distance; they make the very best greens for early summer and when the roots get larger and even full grown it makes a vegetable dish, when boiled tender and cut up fine, that everybody learns to appreciate who has had the privilege of testing it a few times. It is much more wholesome than cabbage, and a great deal more easily grown. Then the parsnip comes in for winter use and lasts till rhubarb is ready in the spring, with very little trouble in storing, as it remains in the ground all winter and is taken up as wanted, until the middle of April. Then take up the balance, and they will keep in a cellar for six weeks. It is also the heaviest cropper of all garden vegetables, only requiring deep, rich soil to make it the most satisfactory crop in quantity. Now for a garden where a man has time on his hands to dispose of and who has a home and family. He should have his vegetable garden as well as the flower and ornamental plot. It only needs to be started and its pleasures, not counting its usefulness, repays all who are not in an active business life. For instance, the fall agricultural and arts exhibition comes round, and you can go into your garden and cut a cauliflower that weighs 20 lb. white and perfect as if it was carved out of alabaster; you can pull up parsnips six lb. in weight; and find great pumpkins, and a squash or two, weighing over three hundred lb. Now you feel a high sense of pleasure because you know you have made these grand specimens of vegetables through the work you have so patiently bestowed on them. Now this is the sphere in which a man should live whatever occupation he follows, he should work to make new developments; and in the vegetable kingdom the field is larger than any other, as a great part of the vegetable kingdom has been created for man's food. So our duty is to improve upon what we find in nature and it is of great importance to have a unity of feeling on the great benefit of a higher knowledge in vegetable growing. The field is large and there is room for united action such as will tend toward the dignity, honor, pleasure and long life of man.

GARDENING.

By J. Cuppage, Orillia, Ont.

As in designating our various spheres, our Secretary has assigned to me general subjects. I shall try to occupy my allotted ten minutes by saying something about gardens in general, and a few minor topics in particular.

Gardening is the most ancient, natural and healthful of all employments; for we read that God Himself planted the Garden of Eden with fruit trees, plants pleasant to the sight and good for food, and herbs bearing seed. Our first parents were placed in this garden to dress it and to keep it. Ever since it has been the employment which brings us closest to the beauties and luxuries of nature, and when we neglect or ignore its pleasures we are departing from the pristine perfection of humanity.

As Miss Hodge, Mr. Bacon and others are better qualified to deal with flowers, climbers and ornamental shrubs, I shall merely observe that many of our native plants are well worth cultivation, with the advantage of being thoroughly adapted to the climate, and that between annuals, perennials and available pot or bedding plants, for half the year Ontario justly deserves to be called Florida.

Note.—To Mr. Warnock, writer of this paper belongs the honor of exhibiting the largest pumpkin and the largest squash at the World's Fair.—*Secretary.*

In vegetables we fail to take advantage of our opportunities, as comfort and health would both be subserved by a greater variety upon our tables. Too many hold to the old English notion that the vegetable marrow is the best of all squashes, overlooking the Hubbard, Turban and many others, which I maintain to be the best and wholesomest vegetables in the world if properly cooked and used. It is a curious fact that many authorities recommend boiling them like potatoes and then squeezing out the water.

Strange that the tuberous-rooted sunflower, or Jerusalem artichoke, is so little used, as in Britain it is a favorite and excellent accompaniment with roast mutton, as the white turnip (also neglected here) is with boiled mutton; and, seeing that the real European artichoke does not thrive in this climate, the so-called Jerusalem one is our nearest substitute.

As time precludes enumeration of small fruits, I will only note that some wild black currants well deserve a place in the garden, being longer lived, thinner skinned, milder flavored and with a longer and later season than the cultivated sorts.

The dry climate and prevalent mildew make our choice of gooseberries rather limited, and in efforts to originate American varieties it is to be regretted that because its fruit is smooth the low swamp berry seems to have been chosen for the female parent, as its sprawling habit and lack of flavor are serious faults. The other class, with high flavor and upright, tall growth, should have made a better foundation. While berries of some wild varieties are actually too prickly to handle, others are large, good and only slightly hairy. Their peculiar mode of renewal renders them especially long lived, and I have known a plot which after planting received no special care to continue bearing for 40 years.

In raspberries many fine varieties and hybrids have originated from the wild sorts, sometimes even white or yellow; but waste places are now becoming few.

For cherries our chief dependence has been on the old Kentish, but for years it has been sadly affected with black knot, which is tainting other kinds also. The Vladimir and other Russians may soon give us a greater variety of good quality.

In this district it is foolish to strive for fruits unsuited to our latitude, and to grumble because we have not everything. We have enough for variety, pleasure and profit, and there is even advantage in exchanging ours for the productions of other places and climes. We need not try to grow peaches, many of the finer varieties of plums, nectarines, apricots or quinces, but we have other varieties sufficient for all purposes. Pears are as good, and I believe that soon the list of our reliable pears will be doubled, and that we shall even have ironclads of good quality.

The wild plum deserves more attention, as, being native, it is thoroughly hardy, and several varieties are excellent for preserving and good for eating.

Doubtless the mountains of China, Japan and Corea will supply us with many good and hardy fruits and vegetables now that commerce and enterprise have opened up regular intercourse.

In apples the flavors, periods and other qualities are sufficiently diverse. Several varieties are specially adapted to this district, and I have reason to think that very many accidental seedlings if rescued from neglect would prove well worthy of propagation, and not only here, but even on Yonge street and down the St. Lawrence river.

But how to do it is the question. A travelling agent or expert would be too expensive. Perhaps some plan could be devised to offer prizes for seedlings of first and second quality, conditional on supplying so many scions.

It is generally believed that apples do not, or will not, reproduce their own varieties from seed, but I have two seedling St. Lawrences bearing, and perfectly true.

I also know a good Northern Spy, a large tree, free from the usual breaking down of the centre, which grew from a seed sown from 50 to 60 years ago.

In apologizing for this prosy paper, I only hope that these random remarks, derived from my limited observation and experience, may suggest something useful, or start profitable discussion on the subjects we are met to consider.

SOME HANDSOME AUGUST-BLOOMING FLOWERS.

BY D. W. BEADLE, 303 CRAWFORD ST., TORONTO.

The two coneflowers are very showy, well worthy of cultivation in the flower garden. The variety most widely disseminated is the ORANGE COLORED CONEFLOWER, *Rudbeckia hirta*, (*Linn.*) It begins to bloom in July, continues through the month of August, and often to the middle of September. The ray florets are of a flaming orange color, varying in length from half an inch to an inch ; the cone-shaped centre, or disc, is of a deep, rich purple, contrasting most effectually with the bright rays. It is to be found in open meadows and sunny spots on the borders of thickets. The plant is rough, hairy on leaf and stem, grows to the height of one to three feet, often a straight, simple stem but in good soil is frequently branched from near the base. The flower heads are borne singly on long stalks, well adapted for cutting, and last in the water for a week. The leaves on the stalk are few, widely separated, and without petiole (leafstock) ; the lower leaves are petioled.

The YELLOW CONEFLOWER, *Rudbeckia laciniata*, (*Linn.*), may be readily distinguished from the preceding by its light yellow rays, greenish disk, smooth stem, branching habit, taller growth, and laciniate (jagged) leaves. It grows to a considerable height in rich, moist bottom lands, but usually from five to seven feet. The ray florets are often two inches long, narrow in proportion to their length, and drooping. Their color is a clear, bright yellow. The heads are borne on long stalks, and keep in water for a week when cut. This species is usually found growing in low thickets, and is specially vigorous in the flats of the Humber river, not far from Toronto.

There are two species of liatris to be found growing in Ontario, known in some places by the name of Blazing Star. THE CYLINDRICAL BLAZING STAR, *Liatris cylindracea*, *Willdenow*, is quite common in the vicinity of Toronto, growing to the height of twelve to eighteen inches ; the stem is slender, upright and rigid ; the leaves long, narrow, grass-like. The flower heads are set alternately on the stem, in the axils of the leaves, and borne on stout stalks. The form of the flower heads is cylindrical, and there are from eight to twelve heads on a stem, containing from sixteen to twenty rosy-purple flowers in each head. It is to be found in dry soils, usually on the slopes near lakes or streams, growing from a bulbous or corm-like root ; these corms can be easily taken up in the autumn and transferred to some dry, sunny spot in the garden, where they will flourish with but little care.

LIATRIS SPICATA, WILLDENOW, is much like the one just described, growing taller, from two to five feet high ; the heads more closely crowded on the long spike ; and frequenting moist instead of dry soils. It has not been found by the writer, in the vicinity of Toronto. Mr. J. A. Morton mentions it among the attractive wild flowers growing in the vicinity of Wingham, and Macoun says it is found in marshy meadows from Sarnia to Point Edward.

The flowers of both varieties retain their rosy-purple color when dried, thus making an excellent winter bouquet. They can both be grown from seed as well as by transplanting the corms, and make, in a short time, an attractive feature of the flower garden. There is another Canadian species found in our prairie lands, the flower heads of which contain from thirty to forty flowers. It grows in dry soil, from two to five feet high, and according to Gray is to be found from New England westward to Minnesota, and southward. It is known as *Liatris scariosa*, *Willdenow*, The rudbeckias and liatris belong to the Composite family.

THE BUTTERFLY-FLOWER, *Asclepias tuberosa*, (*Linn.*), grows in any dry soil in the open sunshine ; sometimes to be found in open woods, or among trees of small growth. The roots are thick and in young plants carrot-like in shape, but lose this form with age, becoming more woody and extending to a considerable depth. They do not bear transplanting well, on which account it is better to raise them from the seed sown where the plants are to remain. The stalk is erect, clothed throughout with broadly linear leaves, and fine hairs; branching at the top, the branches terminating in a corymb of brilliant orange-red flowers, varying in intensity of color with the age of the flowers. The plant continues in bloom for a considerable while, and the cut flowers keep a long time in water, thus adding to the variety of such as are desirable for table bouquets; while the cut stems do not exude a viscid, milky juice so abundant in some of the other species of this genus.

The peculiar form of the individual flowers of all of the plants of this genus is a very interesting study, a careful examination of which is earnestly commended, noting particularly the hooded nectaries on the tube of stamens which encloses the pistil, and the attachment of the anthers to the stigma, with their hanging pairs of pear shaped pollen-masses.

THE CARDINAL FLOWER, *Lobelia cardinalis*, (*Linn*), is widely distributed throughout Ontario, frequenting low grounds, yet easily grown in any good garden soil, especially from seed. The flowers are very showy, deep red, borne on stems two to four feet high, in elongated, somewhat one-sided racemes. The flame color of these flowers renders them a very conspicuous garden ornament. The plants will thrive in partial shade, or in the open air, but do not endure well a protracted drouth.

THE GREAT LOBELIA, *Lobelia syphilitica*, (*Linn.*), is a blue flowered species, the flowers nearly an inch long, borne on a leafy stem varying from one to five feet high. This also is to be found in low grounds throughout Ontario. The writer has had no experience with it in cultivation, yet has no doubt but that it could be easily grown from seed in good garden soil, especially if not allowed to suffer from drouth.

THE HAREBELL, *Campanula rotundifolia*, (*Linn.*) This beautiful flower begins to appear in the last days of June, and continues with us all summer. The blossoms are bright blue, from half an inch to three quarters long; the plant seems to prefer partial shade, takes kindly to the garden, and makes a pretty appearance planted in masses. It is also indigenous to Europe.

> "E'en the slight Harebell raised its head
> Elastic from her airy tread."
> —*Walter Scott.*

ROSES.

BY WEBSTER BROS., HAMILTON, ONT.

Roses in the garden will in all probability be attacked by the thrip as soon as the foliage appears. Spraying with Paris green will be found an effectual remedy. A small quantity of soft soap, or even common soap, added, will make the remedy more effective. Care should be taken to burn all the wood pruned out of the roses, as that is where the thrip winters in the larvæ state, and as many of the roses are alive to the tips, or nearly so, this spring, a large number of the little pests will probably be found at work.

Examine all budded roses and remove all suckers that may have been overlooked last summer, this is of very great importance, as the suckers if allowed to remain. invariably destroy the rose bush. In pruning, the strong growing varieties should not be cut back as closely as those of a medium or weakly growth, for instance, if a strong vigorous bush of John Hopper were pruned as closely as Louis Van Houtte, the great probability is that John would produce elegant canes but little bloom. Some objections may be taken to this plan, but as a set-off, there is a certainty of great numbers of roses.

The old question of budded or own root roses, comes up fresh as ever every spring, and there is doubtless something to be said for and against either. Roses budded on the Manetti stalk will succeed in a greater variety of soils than roses on their own roots, and some roses such as La France, will attain a good size budded on a strong stalk, while on their own roots they have sometimes a struggle for existence for the first year or two. The only objection to the budded roses is that they are liable to throw up suckers from the stalk which if left to grow will injure the roses.

The "nice black mould from the woods," is the source of many a total failure among rose amateurs ; it is doubtless desirable for some plants but roses will have none of it, a stiff clay suits them much better.

Reference was made to the comparative merits of Gloire de Dijon, and William Allen Richardson. The writer's experience has been, that while the old Gloire de Dijon is hardy enough to survive our winters with slight protection, and is a strong grower and an abundant bloomer, W. A. Richardson was, when grown under similar circumstances, a free grower, but an unusually shy bloomer; what few blooms were produced, were however very fine.

A very good plan for growing the strong-growing varieties, is to plant a number of them together and, instead of shortening back the canes, simply to thin out weak shoots, and to carefully bend down the canes, securing the tips to the ground by means of pegs or otherwise ; this will cause the eyes along the entire length of the canes to send forth shoots and bloom, that would never have started had the cane remained perpendicular.

HEDGES.

By Charles E. Brown, Yarmouth, N. S.

Surrounding our principal school grounds, several acres in extent, and enclosing a large number of our finest private residences, the hawthorn spruce and beech hedges of Yarmouth, excite the wonder and admiration of visitors. The common Scotch hawthorne is used, to which Burns refers in his "Cotter's Saturday Night"

> "Beneath the milk white thorn that scents the evening gale,
> Fond lovers in each other's arms breathes out the tender tale."

Three year old plants are imported, costing, delivered here, about eight dollars per thousand, the ground is properly prepared, drained, dug over and fertilized, the plants are set early in the spring, being among the first to grow, in double rows, ten or twelve inches apart, breaking joints. They are pruned two or three times a year to make a dense, bushy hedge, and allowed finally to attain a height of five or six feet, or in some cases, twelve or fourteen, that is proof against man or beast, dog, goose or small boy, and a perfect protection from the wind

I can remember the first of these hedges, set out over *sixty years ago* and *still one of the best.* About thirty years ago, to improve its condition, it was cut back to the single stem, which was then hacked and slashed when it was desired new buds should break, and within a few years the whole hedge was in finer shape than ever.

A few specimens of this single white hawthorn have been allowed to grow, without pruning, to a height of about twenty feet, with a diameter of trunk of (12) twelve inches or more, and in some cases whole hedges have been neglected and permitted to grow to their full height. In June these are a mass of white bloom of most delightful perfume, filling the whole air with fragrance. The double white, single and double, rose and red hawthorn, are grown singly among our favorite ornamental trees, and are very beautiful during the brief period of bloom, but are destitute of fragrance.

Hedges of the native spruce from six to twenty feet high, are also grown to perfection ; they bear pruning equally with the thorn, and in the winter season, in their comfortable dress of living green, opposing an impenetrable barrier to the fiercest winds, seem preferable to a deciduous hedge.

The Norway spruce fails here *utterly* everywhere ; in hedges the lower limbs die, and as individual specimens, the growth is shaggy and irregular ; out of the hundreds that have been planted, not a single fine specimen has ever been grown.

The Scotch beech has been planted in hedges and as a single ornamental tree, chiefly in our cemetery ; it bears pruning well, and its perfect hardiness, its thrifty, rare growth, and its fresh, pretty shade of foliage makes it a favorite.

No other hedge plant has succeeded out of the many that have been tried, on the recommendation of the ubiquitous tree agent. I recall the locust, the cedar, the buckthorn, the privet, and the box, among the failures.

STRAWBERRY GROWING—THINGS WE HAVE OBSERVED.

By John Little, Granton, Ont.

Every year we plant new varieties of the strawberry to test and compare with those of former season's planting. By this means we arrive at the value of those most worthy to keep for one's own use, and to sell to those who buy yearly from me those best commended.

This spring I ordered several varieties at $2 per doz. and did not get them till near the beginning of June (after coming through the Custom House, which is as bad to many in Canada as the potato bettle and other noxious vermin). The plants were badly wilted, yet I did not like to lose them all, although it was so late in the season. I came to the conclusion I would cut the tops off some of the roots and put them in water, slightly warm ; they were cut just above the crown. They remained in the water till morning, and then I set them carefully in ground all ready prepared for them about six inches apart, so that if they lived I could cut them in squares, earth and roots together. To my astonishment not one plant died, but took hold of the soil at once, and one month from the time they were planted one could not tell the difference between them and those planted in April.

I have been so favorably impressed by this method that, if spared till next spring, I will cut the top from all strawberry plants we shall set. After being a close observer of growing plants for years, I have noticed that plants set early had a struggle for life, when three to five large leaves had to be supported. What benefit did the plants derive from these leaves ? Your answer will be, not any. If no benefit was derived, they were an injury. I think I can prove beyond a doubt that the large leaves upon young plants are injurious to them. Take a four-year-old tree, set with limbs not trimmed ; then take a similar tree and cut branches back within eight inches of stalk, and then notice for yourself which will start to grow the sooner. The greater amount of sap it requires to start a plant or tree, the longer it will be in starting.

Another point worthy of mention is that it is the crown you want to have start to grow, so that it may be able to keep its leaves above ground ; and it has a great disadvantage where the plant is struggling with these leaves, which feed upon the few fibrous roots that have taken hold. With the plant stripped of these leaves, there is nothing to support, and the plant takes hold of the soil at once, and in a day or so you will see the crown making its appearance ; and it would take some two or three weeks if it had the upper part of the plant feeding from it. Some think without you have a heavy top the plant is worthless, but, if you experiment in this line, you will become wiser.

Another point worthy of mention is *at what season should the plant be allowed to run* I answer not before July, and for fruiting beds I prefer August 1st to 15th ; and the plant at that date will produce more runners than the plants that were let run at July or earlier. If the runners are kept back the plants get a good start, and it has nothing to support but itself ; but if let run at an early period the runners will be feeble, and so will the plant the rest of the season. This season was proof of this with me. Had I let the plants run at an early date they would not have made one-third the plants they did. Those that started in September run along the ground, but at the first rain took root and made fine plants, as the vines were vigorous and had strength to push them.

Again, many overlook another important point and allow the blossoms to remain on the plant, thus exhausting its strength. The proof of this will be evident by noticing two plants side by side; let one bloom and produce fruit, and nip the bloom from the other, and see which one will make the finest plant or the first runner. These points are worthy of observation. and you will profit by testing them.

Selection of Varieties.

There is no business more profitable than strawberry growing, provided the right method is followed. One of the chief secrets of success is to have not only a variety suited to your soil and climate, but the best varieties so suited. In no fruit grown is there as great and rapid improvements as in the development of the strawberry. If a man sticks to an old variety, either originally inferior, or running out, as all are prone to do, when he might be growing one twice or even three times as productive, the vines of which will, owing to superior size, firmness, beauty and general excellence, bring 50 per cent. more in any market, it is easy to see what disadvantage that man is laboring under. Yet, there are such men without number. They are fighting a brave but losing battle against progress. Keep in front, or, at least. keep in the front line, and grow the variety or varieties best suited to your soil. Do this or go out of the business, the quicker the better.

Most members of the Fruit Growers' Association are acquainted with the following varieties: Woolverton, Saunders, Williams, Bubach No. 5, Haverland, Hatfield; but of the newer varieties they may not be much acquainted, such as Marshall, Brandywine, Mary, Henry Ward Beecher, Aroma, Cyclone, Banquet, Noble, Princeton Chief, Tennessee Prolific, Timbrell, Annie Laurie, Splendid, Staples. The most of these will be offered for sale next spring. In productiveness, size, quality, they compare favorably with Woolverton, Bubach, Marshall and Timbrell.

COMMUNICATIONS.

Regrets.

Letters of regret, because unable to attend, were received by the Secretary from the following gentlemen: Messrs. A. McD. Allan, Goderich; J. R. Howell, Brantford; J. D. Stewart, Russeldale; Dr. Aylesworth, Collingwood; E. B. Edwards, Peterborough; William Saunders, Director Central Experimental Farm, Ottawa; the Hon. John Dryden, Minister of Agriculture, and others.

World's Fair Medal.

The following letter from John Boyd Thatcher, Chairman Executive Committee of Awards, World's Fair, was received by the Secretary. It refers to the medal and diploma conferred on the Ontario Fruit Growers' Association for the excellence of its publications on horticulture, viz.: Sixteen volumes of The Canadian Horticulturist, and the many valuable reports published during the term of years from 1862 to 1893, inclusive.

The letter reads:

Washington, D. C., March 24, 1894.

Dear Sir,—I have this day forwarded to the Honorable Commissioner representing your country at the World's Columbian Exhibition an official copy of your award, which, in due time, will be inscribed in the diploma, and reach you through the proper channels.

Yours,

John Boyd Thatcher,

Chairman Executive Committee on Awards.

SEEDS FROM RUSSIA.

In our Report for 1892 the members of our Association will remember that the Secretary gave a statement of the varieties of apple, pear and other fruit trees, scions and pits sent to his care by our friend Mr. Jaroslav Niemetz, of Winnitza, Podolic, Russia, who has become a regular member of our Association and a contributor to the pages of our journal.

Last spring he sent us a large collection of seeds, which the Secretary at once placed in charge of Mr. Saunders, Director of the Central Experimental Farm, Ottawa, where the best facilities are at hand for their germination.

The following letter from the Director gives an idea of the results. Time only will show whether any of the varieties will be of value to us in Canada :

OTTAWA, Nov. 14, 1894.

L. WOOLVERTON, ESQ.

DEAR MR. WOOLVERTON,—You wrote me some time ago in reference to the seeds forwarded from Mr. Neimetz, asking what success we had with them. I have looked up the particulars and submit you the following. You will observe that there was only one species in the lot (*Ribes Sibirica*), which was named, which detracts very much from their value.

The number of plants growing are as follows :

		No.			No.
10	Rose	34	12	Grape	23
6	Potentilla	35	2	Prunus	24
1	Spirea	36	13	Black Currant	30
90	Ribes Sibirica	7	3	No. 44, no name	
2	Ribes "	9	2	Rhamnus	11
15	Hop-tree	21	21	Rhamnus	12
85	Clematis	22	76	Rhamnus	13
1	No. 43, no name		14	Sambucus	45
3	Pyrus, variety of wild crab	45	45	Salvia	

24 No. 26, labelled gooseberry, does not look like gooseberry.

A large proportion of the seeds failed to germinate.

Yours, very sincerely,

WM. SAUNDERS.

SPECIAL FRUIT MARKET IN ENGLAND FOR CANADIAN APPLES.

A letter was also received by the secretary from S. J. Rutherford, St. Hilda, Gaspereaux Co., N. S., as follows :

ST. HILDA'S, Gaspereaux, N. S.

DEAR SIR,—I am having sent to you weekly edition of *Times* (London, England), just received, with a passage in it marked with reference to a circular note issued by the Premier of Tasmania to the heads of the other Australian Colonies with reference to an apple depot in London for the sale of Australian fruit. There is no doubt that this idea would be a great help to the fruit growers

Could not the subject be brought up for discussion at the annual meeting of the Fruit Growers' Association, to see if the Government could not be induced to join the Australian colonies in the scheme, should they determine to try it.

The fruit from Australia not arriving till about May, and their crop being over before the Canadian fruit arrives in September, would enable the building to be kept open for quite, if not nearly, all the year.

I remain yours truly,

S. J. RUTHERFORD.

Copy of extract from *London Times:*

TASMANIAN APPLES.

In a circular addressed by the Premier of Tasmania to the premiers of the other Australian colonies, suggesting the establishment of a joint depot in London for Australian produce, so as to obtain for the producers some of the profits now secured by middlemen, the following passage occurs: "So long as Tasmanian apples are put on the English market through what is practically a close corporation in Covent Garden, so long will the growers be limited in their market, receive less for their produce than they should, and be entirely in the hands of people whose sole object is to get through as much business as they can in one day, regardless of the condition of the market and the growers' net returns."

INSPECTION OF ORCHARDS.

The extremely practical interest which the Tasmanian Government takes in the subject of fruit growing is shown by the following extract from "Walch's Tasmanian Almanac" for 1894: "By Act of Parliament 52 Vict. No. 16 the colony of Tasmania is divided into 30 'fruit districts' to make better provision for the destruction of the Codling moth *(Carpocapsa Pomonella).* In every district the fruit growers elect a board, consisting of seven members, from among such fruit growers; three and four members retire alternately in the month of September. The board appoints an inspector or inspectors for each district, who may at any reasonable time enter any orchard for the purpose of inspecting the trees. Occupiers of orchards are to furnish, on or before the 1st of December in every year, a return stating the number of acres planted with fruit trees on the 1st of September. If return is not made, the occupier is liable for a penalty not exceeding £5. A tax not exceeding 6s. per acre is to be paid annually by occupiers. Owner of unoccupied orchard to be deemed to be occupier. The Governor-in-Council may make regulations for the guidance of boards and their officers, and for prescribing the manner in which, and the times in which, the occupier shall bandage, dress or otherwise treat infected trees. Every person who sells or offers for sale any fruit infected with the moth is liable to a penalty of £5. The following regulations have been made under the Act: "Every occupier of an infected orchard to give notice in writing to an inspector or to the board of the existence of the moth in such orchard. The occupier of an infected orchard shall cause all trees in any orchard to be bandaged Bandages to be placed upon the trunk of the trees not later than the first day of December in each year, and shall be removed and cleansed during the month of July following, and shall not be replaced upon the trees until the month of November then next. Occupiers shall remove all rough and scaly bark from trees during period between May 1 and August 1 in each year, and burn or otherwise effectually destroy such bark as soon as removed. All infected fruit growing on the trees to be at once gathered, and all infected fallen fruit to be forthwith picked up, and all such infected fruit shall be treated for the effectual destruction of the grub, either by immersion in boiling water or in such other way as the board may sanction."

APPENDIX II.

REPORTS OF AFFILIATED SOCIETIES.

THE BURLINGTON HORTICULTURAL ASSOCIATION, 1894.

OFFICERS :

President : GEO. E. FISHER, Freeman P. O.

Vice-President : J. S. FREEMAN, Freeman P. O.

Secretary-Treasurer : A. W. PEART, Freeman P. O.

Assistant-Secretary : G. W. PEER, Freeman P. O.

Directors : Apples—O. T. SPRINGER ; Grapes—C. U. DYNES ; Small Fruits—W. V. HOPKINS ; Pears—W. F. W. FISHER ; Peaches—ALEX. RIACH ; Plums —J. S. FREEMAN ; Vegetables—W. J. BRIDGEMAN ; Shipping—JOSEPH LINDLEY.

Auditors : C. U. DYNES and EDWIN PEART.

Executive Committee: DR. HUSBAND, H. WILLIAMS, and ALEX. RIACH.

Entertainment Committee : The President, Vice-President, and Secretary.

We are pleased to be able to report another successful year for our Society.

There has been a substantial increase in the membership, which now numbers over seventy, our meetings have been well attended, and a keen interest is shown in all matters pertaining to fruit growing.

More and more the fact appears to be forced home, that, under the present economic conditions of farming, the line of growing fruit is one of the most profitable that this district can pursue.

Since our last report we have received official notice that the Burlington district scored three awards at the World's Fair, Chicago, on apples, pears and grapes, respectively, thus indicating our capabilities in the production of prime fruits. I might also add that there has been a large increase in the fruit acreage here during the past year or two. According to custom many members of the Association availed themselves of our annual outing. A pleasant and profitable day was spent among a few of the leading fruit growers in the Grimsby district. These outings are useful, entertaining and popular.

A Society exhibit of fruit was made at the Industrial Fair, Toronto, to which was awarded the first prize.

An effort is being made in this township (Nelson) to check the ravages of the black knot. Under the "Black Knot and Yellows Act" the council was petitioned to appoint at least one inspector to enforce the provisions of the Act. Two have been appointed, and they are now on their rounds. We believe that much good will result from it.

Papers and addresses were given before the Association during the year by the following gentlemen:

At the annual meeting in January, Messrs. Geo. E. Fisher, the President's annual address, on the fruit industry of 1893; Edwin Peart on "The Apple Crop"; Alex. Riach, the "Small Fruits:" A. W. Peart, on the "Grape Crop;" W. F. W. Fisher, on "Pears and Peaches;" J. S. Freeman, on "Plums;" Harry Williams, on "Vegetables" and Joseph Lindley, on "Shipping."

At subsequent meetings, addresses were delivered by Messrs. O. T. Springer, on "Spraying;" J. S. Freeman, on "Black Knot;" W. V. Hopkins, on the "Strawberry Crop," and W. F. W. Fisher on "Currant and Gooseberry Culture."

These addresses were evolved from the experience, observation and information of successful fruit-growers, and consequently were valuable.

A. W. Peart,
Secretary.

BRANT HORTICULTURAL SOCIETY, 1895.

Officers:

President: Lyman Chapin, Brantford.

Vice-President: Chas. Grantham, Cainsville.

Secretary-Treasurer: D. M. Lee, Paris.

Directors: J. R. Howell, Brantford; T. A. Ivey, Brantford; Chas. Grantham, Cainsville; David Greig, Cainsville; David Westbrook, Cainsville; Jas. Miller, Paris; H. J. Bryan, Mohawk; G. R. Coon, Norwich; John A. Eddy, Scotland.

A meeting was held at Burford, on Thursday, 22nd February, in the afternoon. The following programme was followed out:

Strawberry and Raspberry Culture, by G. R. Coon.
Rules and Prices for Pickers and Picking, by D. M. Lee.
Tomato Growing, by Alfred Ledger.
What are the Prospects of the Burford Canning Factory, by T. S. McIntee.
New Kinds of Fruits by David Greig.
Three Best Varieties of Strawberries for the County of Brant, by H. J. Bryan.
Pear Culture, by S. Hunter.
Canning of Fruit for Home Use, Mrs. (Dr.) Johnston.

The paper on Strawberry Culture, by G. R. Coon was as follows:

STRAWBERRY CULTURE.

I will give my mode of culture. I don't know if it will commend itself to others, but I have found it quite successful with me.

1st, I so arrange my strawberry plantation, that I either have a piece of ground summer-fallowed or ground that has been used for root crop. I manure in the fall late, just freezing up time, spreading it evenly over the ground. In the spring, harrow it the first thing, then plow not too deep and work down with the cultivator and harrow, finishing with roller. Then mark with a one-horse marker 3 ft. 10 in. one way and 2 ft. 8 in. the other. I use a six-tined fork to take up my plants with, not allowing the roots to dry in the sun or wind. Do not take up too many plants at a time. I use a spade made on purpose with a double blade standing one and a half inches apart at the top. The blade is only five inches wide, a foothold only on one side.

This is pressed in the ground about six inches and removed so as to leave a hole in the shape of a wedge. One boy follows and drops for two boys who set the plant in so as to leave the crown of the plant even with the top of the ground; in this way it is not difficult to get the dirt firmly packed about the roots.

I never water plants. As soon as the first weeds break the ground we start the cultivator and work them both ways, always hoeing before they appear to need it.

If the season is favorable the cultivator should be stopped about the 20th of July, and only cultivate the way the rows are intended to run.

Then use the hoe, placing the runners each way from the parent plant placing a lump of dirt on the runner to keep the wind from blowing it out of place. Cultivate and hoe as late in the fall as the ground will admit. As soon as the ground freezes sufficient to bear up the horses and waggon, cover with clean straw, not too heavy, else you may smother the plants. This straw is removed in the spring as soon as the plants fairly start to raise the straw. The straw need not be removed if it is thin enough to admit of the plant growing through.

FRUIT CANNING FOR HOME USE.

The following selection is taken from the paper on this subject read by Mrs. JOHNSTON:

A few suggestions can be given and which may, at least lead to discussion. A very good rule for canning small fruits and one that has met with great success is after making a syrup of the proper consistency to pack the fruit loosely in jars, pouring the syrup in afterwards. Have a vessel of cold water on the stove, place the jars in the water, allowing the fruit to boil about twenty minutes. Strawberries and raspberries canned in this way retain their flavor and color and remain whole. Plums, after being peeled are excellent put up in this manner. A good idea is to wrap two or three thicknesses of paper around the jars, as contact with the light affects the quality and color of the fruit.

An excellent rule for canning larger fruit such as peaches and pears is to place them in a steamer over a kettle of boiling water, laying first a cloth in the bottom of the steamer. After the fruit is steamed for about fifteen minutes drop each for a moment in the syrup, then place in cans, cover with the syrup and seal tightly.

GRIMBSY HORTICULTURAL SOCIETY.

The following are the officers of the Grimsby Horticultural Society organized 1895:

President: J. H. Grout.

Vice-Pres.: C. W. Van Duser.

Sec.-Treas.: C. W. Van Duser.

Directors: Messrs. Wm. Forbes, A. G. Pettit, E. H. Read, James Doran, H. H. Anderson; Mesdames—E. J. Palmer, R. J Hewat, P. H. Gamble and A. G. Pettit.

Auditors: Geo. Alexander and Thos. Johnson.

C. W. VAN DUSER,
Secretary.

WOODSTOCK HORTICULTURAL SOCIETY.

The following officers have been duly appointed for 1895:

President: T. H. Parker.

Vice-President: D. W. Karn.

Directors: G. R. Pattullo, R. B. Thornton, Geo. Blake, Angus Rose, Fred Mitchell, J. S. Scarff, and Malcolm Schell.

Auditors: J. G. Wallace and Mayor Cole.

At the closing of the general meeting a meeting of the directors was held and Mr. R. B. Thornton was appointed secretary, and Mr. J. S. Scarff, treasurer. It was also decided that all members of the Horticultural Society be made members of the Ontario Fruit Growers' Associaton.

R. B. Thornton,
Secretary.

WATERLOO HORTICULTURAL SOCIETY.

Sir.—The following gentlemen have been elected officers of the new Horticultural Society formed here, in affiliation with the Fruit Growers' Association of Ontario :

President : James Lockie.

Vice-President : Charles Moogk.

Directors : Mrs. Philip Hohmeier, Mrs. H. J. Grassett, Mrs. George Wegenast ; Messrs. C. M. Taylor, J. H. Winkler, George Bolduc, William Henry, William Raymo and J. H. Roos.

Auditors : Messrs. John Killer and Byron E. Bechtel.

James Lockie,
President.

THE NIAGARA FALLS SOUTH HORTICULTURAL SOCIETY.

Sir,—The following officers have been duly elected for the year 1895, and we have made all our members to be also members of the Fruit Growers' Association of Ontario. The date of organization was Jan. 25th, 1895 :

President : T. G. Cadham.

Vice-President : Dr. W. W. Thompson.

Directors : Rev. Canon Bull, Reeve H. G. A. Cook, Mrs. Land, Miss L. McNally, E. Morden, George Law, Thomas Berriman, R. Cameron, Edward Skilton.

Secretary : E. Morden.

Treasurer : William Doran.

The Society, which starts with about 70 members, is made up of the leading fruit growers in Stamford township and the leading families in the village of Niagara Falls.

E. Morden,
Secretary.

THE LINDSAY HORTICULTURAL SOCIETY.

Sir,—We have had during the past year 132 members in the Society, distributed 132 journals on fruits and flowers, some monthly and some semi-monthly ; held 6 meetings, public and directors'. There was some interesting discussions on fruits and flowers at our annual meeting held January 10th. The following officers were appointed for the year 1895 :

President : Mr. Joseph Cooper.

Vice-President : Mr. W. M. Robson.

Sec.-Treas : F. J. Frampton.

Directors : Messrs. Thos. Connolly, Thomas Beall, Robert Speir, Joseph Kickaby, J. H. Knight, W. H. King. Mrs. T. Beall and Mrs. H. McLaughlin.

Auditors : Mr. John Dobson and Mr. William Flavelle.

F. Frampton,
Secretary,
Lindsay.

APPENDIX III.

CATALOGUE OF FRUITS FOR USE OF JUDGES AT EXHIBITIONS.

APPLES.

Explanatory Note.—In the plan of rating, all varieties are supposed to be perfect specimens; then the best varieties under each of three or four heads are rated at ten, and all the more or less inferior varieties by some figure less than ten. It frequently happens, however, even with the best varieties, that imperfect samples are exhibited. In such cases all values given in the Catalogue must be reduced one or more points each, for (1) lack of color, (2) undersize, (3) unevenness of size on plate, (4) wormy, scabby or illshapen specimens, (5) lack of stem or calyx, (6) polished fruits, *i.e.*, having bloom wiped off, or for any other thing which tends to change the natural appearance of the fruit. To aid judges still farther in the intelligent discharge of their duties, score cards have been prepared by the Association, copies of which may be had from the Secretary.

The column "Total Value" is for use when prizes are offered for fruits without designating the purpose for which such fruits may be required.

Name.	Season.	Quality.		Commercial value.		Total value.
		Dessert.	Cooking.	Home market.	Foreign market.	
Alexander	A	....	9	9	10	28
American Golden Russet	W	9	8	8	9	34
American Summer Pearmain	S	3	1	2	....	6
Arnold's Beauty	W	5	2	2	3	12
American Pippin	W	5	8	3	5	21
Adam's Pearmain	W	8	8	7	7	30
Autumn Strawberry	A	5	1	2	5	13
Bailey Sweet	W	4	8	4	4	20
Baldwin	W	2	5	7	8	22
Beauty of Kent	A	6	6	8	7	27
Ben Davis	W	1	3	8	9	21
Benoni	S	10	8	4	7	29
Belmont	W	3	6	4	6	19
Blenheim Pippin	W	6	7	9	10	32
Blue Pearmain	W	6	6	8	8	28
Bottle Greening	W	6	7	2	4	19
Bourassa	W	5	4	3	6	18
Cabashea	W	2	7	8	9	26
Canada Baldwin	W	6	8	8	9	31
Canada Reinette	W	4	8	5	7	24
Cayuga Red Streak	A	2	8	7	8	25
Chenango Strawberry	A	8	3	7	....	18
Colvert	A	3	9	7	8	27
Cornish Gilliflower	W	1	....	1	2	4
Cox's Orange Pippin	A	9	3	7	10	29
Cranberry Pippin	W	7	8	8	8	31
Cellini	W	2	8	7	6	23
Domine	W	5	7	6	7	25
Drap d'Or	A	2	6	3	5	16
Detroit Black	A	....	4	2	4	10
Duchess of Oldenburgh	S	6	10	10	10	36
Dyer	A	7	5	3	....	....
Early Harvest	S	9	3	9	....	21
Early Joe	S	8	3	3	....	14
Early Strawberry	S	8	2	7	....	17
Edgar's Red Streak	W	5	7	7	8	27
Ella	W	2	4	3	5	14
Esopus Spitzenburg	W	9	7	9	10	35
Fallawater	W	7	8	8	9	32
Fall Jenetting	A	3	7	7	7	24
Fail Orange	A	4	7	6	3	20
Fall Pippin	A	6	8	7	7	28
Flushing Spitzenburg	W	6	6	6	7	25
Fameuse	A	10	5	10	8	33

Note.—In the first column the letter S denotes summer, A autumn and W winter.

CATALOGUE OF FRUITS.—APPLES.—*Continued.*

Name.	Season.	Quality.		Commercial value.		Total value.
		Dessert.	Cooking.	Home market.	Foreign market.	
Fall Queen (*See* Haas)	......	......	......	......	......	......
Gloria Mundi	W	......	8	6	8	22
Golden Russet (English)	W	8	7	8	9	32
Golden Sweet	A	2	4	1	......	7
Grand Sultan	A	5	8	6	6	25
Gravenstein	A	9	9	10	10	38
Green Newton Pippin	W	9	4	6	8	27
Grimes' Golden	W	9	2	6	7	24
Haas (*See* Fall Queen)	A	5	7	7	6	25
Hawley	S	6	5	5	......	16
Hawthornden	A	2	8	7	7	24
Holland Pippin	A	6	8	7	7	28
Hubbardston Nonsuch	W	7	8	8	8	31
Hurlbut	W	8	8	8	8	24
Irish Peach	S	......	......	......	......	......
Jeffries	A	7	6	6	7	26
Jersey Sweeting	A	1	3	1	......	5
Jonathan	W	9	7	7	8	31
Kentish Fillbasket	A	......	8	8	8	24
Keswick Codlin	A	1	9	6	7	23
King of Tompkins County	W	8	10	10	10	38
Lady	W	9	......	1	9	19
Late Strawberry	A	7	5	5	7	24
Lawyer	W	5	7	4	5	21
Lord Suffield	A	3	8	6	7	24
Lord Duncan	A	2	9	7	6	24
London Pippin	W	......	8	......	......	......
Lowell	A	5	7	4	......	......
Lord Burleigh	A	2	9	5	......	16
La Rue	W	4	9	8	8	29
Maiden's Blush	A	3	8	9	8	28
Mann	W	4	7	6	8	25
Magog Red Streak	W	3	7	5	7	22
McIntosh Red	W	10	7	7	8	32
Melon	W	8	8	7	8	31
Minister	A	4	6	6	5	21
Monmouth Pippin	W	6	8	6	7	27
Mother	A	8	7	6	6	27
Munson Sweet	A	1	3	2	......	6
Newton Spitzenburg	A	7	8	6	7	28
Northern Spy	W	8	10	10	10	38
Newton Pippin	W	9	9	7	10	35
Ontario	W	9	10	10	10	39
Peck's Pleasant	W	7	7	6	8	28
Pennock	W	5	7	7	8	27
Pewaukee	W	6	8	8	8	30
Peach	A	......	......	......	......	......
Phœnix	W	4	7	7	8	26
Pomme Grise	W	9	......	5	7	21
Pomme Grise d'Or	W	10	......	6	8	24
Porter	A	5	4	5	3	17
Priestly	W	4	5	6	7	22
Primate	S	7	6	6	......	19
Prenzea	A	9	9	5	5	28
Princess Louise	W	10	7	8	8	33
Pumpkin Sweet	A	......	4	1	......	5
Pumpkin Russet	A	1	6	4	5	16
Pomme Royale (*See* Dyer)	......	......	......	......	......	......
Rambo	A	5	1	2	5	13
Rawles Janet	W	4	5	3	5	17
Red Astrachan	S	5	7	8	......	20
Red Belle-fleur	A	2	4	2	......	8
Red Canada	W	6	6	7	8	27
Red Cathead	A	6	8	7	7	28
Red Russet	W	5	6	7	7	25
Red Bietigheimer	A	......	......	......	......	......
Rhode Island Greening	W	8	10	8	8	34

CATALOGUE OF FRUITS.—APPLES.—*Continued.*

Name.	Season.	Quality.		Commercial value.		Total value.
		Dessert.	Cooking.	Home market.	Foreign market.	
Ribston Pippin	W	10	8	8	10	36
Roxbury Russet	W	6	8	8	9	31
Scarlet Pearmain	A	5	6	5	6	22
Shiawassee Beauty	A	7	6	6		19
Smith's Cider	W	1	4		1	6
Smokehouse	A	3	6	4	6	19
Sops of Wine	S	2	5	2		9
St. Lawrence	A	7	8	8	5	28
Stump	A	5	6	5		16
Summer Rose	S	6	6	4		16
Swaar	W	7	2	1	4	14
Swaize Pomme Grise (*See* Pomme Grise d'Or)						
Stark	W	2	2	7	8	19
Snow (*See* Fameuse)						
Talman Sweet		6	5	3	4	18
Tetofsky	W	7	9	6		22
Trenton	S	10	5	9	9	33
Twenty Ounce (*See* Cayuga Red Streak)	A					
Vadevere	A	6	5	4	6	21
Wagener	W	8	7	6	7	28
Wallbridge (*See* Edgar's Red Streak)						
Wealthy	W	8	6	9	9	32
Westfield-Seek-no-Further	W	7	7	7	8	29
White Astrachan	S	1	2	1		4
William's Favorite	W	5	7	5	6	23
Wine Sap	W	7		1	3	11
Wine	W	7	7	8	8	30
Yellow Belle-fleur	W	8	7	5	5	25
Yellow Transparent	S	6	7	6		19

GRAPES.

(*This list is subject to revision each year.*)

Varieties.	Color.	Season.	Quality for table.	Shipping value.	Market value.	Total.
Agawam (Rog. 15)	R	L	8	10	9	27
Allen's Hybrid	W	M	5	2	4	11
Amber Queen	R	M	5	4	4	13
Amber	R	L	1	3	2	6
Aminia (Rog. 39)	B	M	8	10	6	24
Ann Arbor	W	E	3	2	3	8
August Giant	B	M	5	1	5	11
Augusta	B	M	6			
Barry (Rog. 43)	B	M	7	9	7	23
Brighton	R	E	9	6	8	23
Black Eagle	B	L	1	3	2	6
Black Pearl	B	L	1	3	2	6
Burnett	B	M	5	5	4	14
Canada	B	M	2	3	1	6
Catawba	R	L	9	8	9	27
Champion	B	E	2	5	5	12

LIST OF ABBREVIATIONS.—R red, W white, B black, L late, E early, and M medium.

CATALOGUE OF FRUITS.—GRAPES.—*Continued.*

Varieties.	Color.	Season.	Quality for table.	Shipping value.	Market value.	Total.
Clinton	B	L	....	5	2	7
Concord	B	M	7	6	8	21
Cottage	B	E	5	5	4	14
Creveling	B	E	6	6	4	16
Croton	W	E	4	3	3	10
Cynthiana	B	L	1	2	1	4
Courtland	B	E	2	5	5	12
Delaware	R	E	10	7	9	26
Diana	R	L	6	8	7	21
Duchess	W	L	5	6	6	17
Dracut Amber	R	E	2	6	4	12
Eaton	B	M	7	5	3	15
Early Dawn	B	M	6	4	3	14
Elvira	W	L	1	2	1	4
Empire State	W	L	3	4	4	11
Early Ohio	B	E	3	6	5	14
Eumelan	B	E	6	5	5	16
Eldorado	W	M	7	5	2	14
Etta	W	L	2	4	3	9
Early Victor	B	E	5	4	3	12
Essex (Rog. 41)	B	L	3	7	6	16
Faith	W	E	2	2	3	7
Florence	B	E	2	2	3	7
Goethe (Rog. 1)	R	L	8	5	5	18
Gaertner (Rog. 14)	R	M	8	6	6	20
Hartford	B	E	3	5	6	14
Herbert (Rog. 14)	B	M	6	8	7	21
Highland	B	L	3	4	2	9
Hayes	W	M	5	2	3	10
Herbemont	B	L	1	2	3	6
Iona	R	L	8	7	6	21
Isabella	B	L	3	7	6	16
Ives	B	E	2	5	5	12
Israella	B	L	3	6	4	13
Janesville	B	E	2	3	3	8
Jessica	W	E	5	5	5	15
Jefferson	R	L	6	4	5	15
Jewell	B	M	4	4	2	10
Lady	W	E	8	3	8	19
Lady Washington	W	L	3	5	3	11
Lindley (Rog. 9)	R	E	10	9	9	28
Massasoit (Rog. 3)	R	E	6	4	7	17
Martha	W	M	6	5	3	14
Merrimac (Rog. 49)	B	L	7	9	6	22
Moore's Early	B	E	7	6	9	22
Moyer	R	E	7	7	9	23
Mills	B	M	6	7	3	16
Moore's Diamond	W	E	7	7	7	21
Marion	B	L	1	4	2	7
Niagara	W	M	8	5	9	22
Noah	W	L	1	5	3	9
Norton	B	L	1	5	2	8
Northern Muscadine	R	M	2	6	6	14
Oneida	R	M	3	2	4	9
Ontario	B	M	2	4	4	10
Othello (Arnold's No. 1)	B	L	2	3	2	7
Perkins	R	E	2	6	6	14
Pocklington	W	M	6	6	6	18
Prentiss	W	L	5	7	4	16
Poughkeepsie Red	W	E	6	6	7	19
Pearl	R	L	1	2	1	4
Rebecca	W	M	8	4	4	16
Requa (Rog. 28)	R	M	7	8	7	22
Rentz	B	M	1	2	2	25
Rockingham	B	M	7	6	8	21
Roger (No. 17	B	M	6	6	6	18
Roger No. 32	R	L	3	7	6	16

CATALOGUE OF FRUITS.—GRAPES.—*Continued.*

Varieties.	Color.	Season.	Quality for table.	Shipping value.	Market value.	Total.
Roger No. 33	B	M	5	7	6	18
Roger No. 11	B	M	7	8	7	22
Salem (Roger 22)	R	M	8	8	8	24
Sanasqua	B	L	5	5	5	15
Secretary	B	M	3	4	3	10
Telegraph	B	M	3	5	3	11
Transparent	W	L	1	4	1	6
Triumph	W	L	1	5	1	7
Taylor	W	L	1	4	2	7
Ulster Prolific	R	M	4	5	5	14
Union Village (*See* Ontario)	....	....	....	....	....	....
Vergennes	R	L	6	10	8	24
Victor (*See* Early Victor)	....	....	....	....	....	....
Walter	R	M	6	7	7	20
Worden	B	E	9	4	8	21
White Ann Arbor	W	E	4	4	4	12
Wilder (Rog. 4)	B	M	8	9	8	25
Wyoming Red	R	E	5	6	7	18
Woodruff Red	R	M	4	6	5	15

PEARS.

——	Dessert.	Home market.	Total.
Ananas d'Ete	4	6	10
Anjou	9	10	19
Bartlett	9	10	19
Belle Lucrative	7	6	13
Beurre Bosc	9	9	18
Beurre Giffard	8	9	17
Beurre Hardy	8	8	16
Beurre Gris d'Hiver	4	4	8
Beurre Superfine	6	5	11
Brandywine	7	8	15
Buffam	5	4	9
Clairgeau	5	9	14
Clapp's Favorite	7	8	15
Dana's Hovey	8	4	12
Dearborn	5	4	9
Dempsey	8	9	17
Diel	5	7	12
Doyenne Boussock	9	9	18
Doyenne d'Ete	5	4	9
Doyenne du Comice	8	7	15
Doyenne Grey	7	5	12
Doyenne White	8	7	15
Duchess d'Angouleme	7	8	15
Flemish Beauty	8	8	16
Frederick Clapp	....	....	....
Glout Morceau	6	5	11
Goodale	8	8	16
Howell	8	9	17
Jones	6	4	10
Josephine de Malines	10	6	16
Kieffer	4	6	10
Kirtland	4	4	8
Lawrence	8	8	16
Louise Bonne	6	8	14
Manning's Elizabeth	7	5	12

CATALOGUE OF FRUITS.—PEARS.—*Continued.*

——	Dessert.	Home market.	Total.
Mount Vernon	8	5	13
Osband's Summer	6	5	11
Petite Marguerite	5	4	9
Pres't. Drouard	7	8	15
Reeder	6	4	10
Seckel	10	5	15
Sheldon	10	9	19
Souvenir de Congres	4	6	10
Swan's Orange	5	7	12
Tyson	8	6	14
Triumphe de Vienne	8	8	16
Vicar	3	4	7
Winter Nelis	8	8	16

DISTRICT FRUIT LIST.—APPLES.

Showing the varieties considered most desirable for planting in the various Agricultural Districts in Ontario.

District No. 1.—Stormont, Dundas, Glengarry, Prescott and Cornwall.

Summer.—Yellow Transparent, Duchess of Oldenburgh.
Autumn.—Alexander, Fameuse, Gideon, St. Lawrence.
Winter.—La Rue, Pewaukee, Golden Russet, Ben Davis, Talman Sweet.

District No. 2.—Lanark, Renfrew, City of Ottawa, Carleton and Russell.

Summer.—Yellow Transparent, Duchess of Oldenburgh.
Autumn.—Alexander, Montreal Peach, Wealthy and Haas.
Winter.—Pewaukee, Golden Russet, Scott's Winter, Talman Sweet and Edgar's Red Streak.

District No. 3.—Frontenac, City of Kingston, Leeds, Grenville and Brockville.

Summer.—Yellow Transparent, Duchess of Oldenburgh and Red Astrachan.
Autumn.—Alexander, Wealthy and St. Lawrence.
Winter.—Golden Russet, Pewaukee, La Rue, Ben Davis and Red Canada.

District No. 4.—Hastings, Prince Edward, Lennox and Addington.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Alexander, Trenton, Gravenstein and Wealthy.
Winter.—Ontario, Hubbardston's Nonsuch, Pewaukee, Ben Davis and Cranberry Pippin.

District No. 5.—Durham, Northumberland, Peterborough, Victoria and Haliburton.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Alexander, Colvert, St. Lawrence and Gravenstein
Winter.—Ontario, Hubbardston's Nonsuch, Pewaukee, Ben Davis and Blenheim Pippin.

District No. 6.—York, Ontario, Peel, Cardwell and City of Toronto.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Alexander, Gravenstein, Red Beitigheimer and Wealthy.
Winter.—Golden Russet, Pewaukee, Ontario, Ben Davis and Hubbardston's Nonuch.

District No. 7.—Wellington, Waterloo, Wentworth, Halton, Dufferin and City of Hamilton.

Summer.—Yellow Transparent, Red Astrachan and Duchess of Oldenburgh.
Autumn.—Gravenstein. Colvert and Wealthy.
Winter.—Golden Russet, Ontario, Blenheim Pippin, Baldwin and Cranberry Pippin.

District No. 8.—Lincoln, Welland, Haldimand and Monck.

Summer.—Duchess of Oldenburgh and Red Astrachan.
Autumn.—Gravenstein, Ribston Pippin and Wealthy.
Winter.—Blenheim Pippin, Ontario, Princess Louise, Golden Russet and Cranberry Pippin

DISTRICT NO. 9.—Elgin, Essex, Oxford and Norfolk.

Summer.—Duchess of Oldenburgh and Red Astrachan.
Autumn.—Gravenstein, Twenty Ounce and Fall Pippin.
Winter.—Blenheim, Pippin, Ontario, Baldwin, R. I. Greening and Golden Russet.

DISTRICT NO. 10.—Huron, Bruce and Grey.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Gravenstein, Wealthy and Colvert.
Winter.—Pewaukee, Ontario, Baldwin, Hubbardston's Nonsuch and Cranberry Pippin.

DISTRICT NO. 11.—Middlesex, Perth and City of London.

Summer.—Duchess of Oldenburgh and Yellow Transparent.
Autumn.—Gravenstein, Colvert, Alexander and Fall Pippin.
Winter.—Golden Russet, Ribston Pippin, Ontario, Hubbardston's Nonsuch and Cranberry Pippin.

DISTRICT NO. 12.—Essex, Kent and Lambton.

Summer.—Yellow Transparent and Duchess of Oldenburgh.
Autumn.—Gravenstein, Chenango, Strawberry, Wealthy and Lowell.
Winter.—Ontario, Blenheim Pippin, Baldwin, R. I. Greening and Golden Russet.

DISTRICT NO. 13.—Algoma, Simcoe, Muskoka and Parry Sound.

Summer.—Duchess of Oldenburgh and Yellow Transparent.
Autumn.—Alexander, Colvert, Red Beitigheimer and St. Lawrence.
Winter.—Pewaukee, Golden Russet, Scott's Winter, La Rue and Wealthy.

DISTRICT FRUIT LIST.—GRAPES.

DISTRICT NO. 1:

Black.—Champion, Worden, Early Victor, Moore's Early.
Red.—Delaware, Lindley Moyer, Wyoming Red.
White.—Eldorado, Niagara, Jessica, Vergennes.

DISTRICT NO. 2:

Black.—Barry, Rog. 17, Herbert, Moore's Early, Worden.
Red.—Delaware, Gaertner, Norwood, Vergennes, Lindley.
White.—Duchess, Kensington, Moore's Diamond, Lady.

DISTRICT NO. 3:

Black.—Champion, Moore's Early, Worden, Hartford.
Red.—Lindley, Brighton, Delaware.
White.—Moore's Diamond, Jessica, Eldorado.

DISTRICT NO. 4:

Black.—Worden, Moore's Early, Early Victor.
Red.—Wyoming Red, Delaware, Moyer.
White.—Jessica, Moore's Diamond, Niagara.

DISTRICT NO. 5:

Black.—Champion, Worden, Wilder.
Red.—Brighton, Delaware, Salem, Lindley, Agawam.
White.—Niagara.

DISTRICT NO. 6:

Black.—Worden, Moore's Early, Champion.
Red.—Brighton, Lindley, Delaware, Wyoming Red.
White.—Jessica, Niagara.

DISTRICT NO. 7:

Black.—Concord, Worden, Rog. 4—44, Moore's Early.
Red.—Rog. 9—15, Vergennes, Delaware, Brighton.
White.—Niagara, Moore's Diamond.

NORTH LAKE DISTRICT:

Black.—Champion, Worden, Rog. 4, Moore's Early.
Red—Wyoming Red, Salem, Rog. 9, Delaware, Brighton.
White—Jessica, Lady, Niagara.

DISTRICT NO. 8:

Black.—Concord, Worden, Rog. 44, Moore's Early.
Red.—Rog. 9—15, Vergennes, Delaware, Brighton.
White.—Niagara, Moore's Diamond, Pocklington.

DISTRICT NO. 9:

Black.—Worden, Concord, Rog. 4—44, Moore's Early.
Red.—Delaware, Lindley, Agawam, Brighton.
White.—Niagara, Pocklington.

DISTRICT NO. 10:

Black.—Concord, Moore's Early, Wordon.
Red.—Brighton, Delaware, Lindley.
White.—Niagara, Lady.

LAKE SHORE DIVISION:

Black.—Concord, Worden, Moore's Early, Barry.
Red.—Agawam, Brighton, Lindley.
White.—Niagara, Lady.

DISTRICT NO. 11:

Black.—Concord, Worden, Rog. 19, Rog. 4.
Red.—Rog. 9—15, Brighton Delaware.
White.—Niagara, Moore's Diamond, Jessica.

DISTRICT NO. 12:

Black.—Concord, Worden, Moore's Early, Hartford.
Red.—Delaware, Walter, Rog. 15—22, Brighton.
White.—Niagara, Prentiss, Lady.

DISTRICT NO. 13:

Black.—Worden, Moore's Early, Champion.
Red.—Delaware, Lindley, Wyoming Red.
White.—Jessica, Moore's Diamond, Lady.

In compiling the foregoing grape lists we have consulted the directors, as well as the leading fruit growers throughout the several districts. We have also tried to frame the lists so as to advise the planting of such varieties as bear the highest general points for each district for hardiness, productiveness, etc., shipping quality of fruit, and commercial values.

Report of Committee.

APPENDIX IV.

NOTES ON VARIETIES OF FRUITS.

Contributed by Members of the Fruit Growers' Association of Ontario.

OUR OUT-DOOR GRAPES AND THEIR DEVELOPMENT FROM THE NATIVE SPECIES OF NORTH AMERICA.

By W. Mead Patterson, Clarenceville. Que.

As far as limits will permit, it will be our purpose to take a retrospective course along the pathway of the development of the grape, from the period of the discovery of this continent to the present day. The first colonist of North America found wild grapes in profusion and distinguished the species as the Fox and Frost grape. As early as 1564 wine was made of them. An early writer on the subject tells us, the Rev. F. Higginson of the Massachusetts Colony wrote home in 1629, "Excellent vines are here up and down the woods, our Governor has already planted a vineyard with great hope of increase."

Grapes were found by the first settlers of Canada along the St. Lawrence as far north as the Isle of Orleans, and we conclude that they were in abundance from the fact of its being called by Jacques Cartier "Isle de Bacchus." Indeed from early accounts our ancestors showed equally as much enthusiasm over the grapes found indigenous to the country, as that evinced by us in this last half of our century over the descendants of the same given us by nature and art.

The late Prof. Asa Gray arranges the genus *vitis* of North America into four divisions, viz.: *Vitis Labrusca*, or Fox grape; *Vitis cordifolia*, or Frost grape; *Vitis vulpina*, *muscadine*, or southern Fox grape; and *Vitis aestivalis*, or Summer grape. The great array of varieties now in cultivation are the result of either spontaneous or of artificial hybridizing.

Except in California and Mexico attempts on this continent to introduce the European species of grapes have ultimately proved failures. While one of our native species, from the resistant power of its roots to the *phylloxera*, has given the European vineyardist valuable stock for grafting upon, that have saved their vineyards from total destruction.

To the *Vitis labrusca* of Linnæus we owe the greater number of our present varieties. Its native home is east of the Alleghany Mountains, from South Carolina extending north to Canada. It adapts itself to varied soils and conditions, attaining the greatest size in the granitic soil of New England. From the class known as the northern *labrusca* our most valuable hybrids have been obtained.

The persistence of this type is so marked that where its existence as forming one of the parents of an hybrid has been in doubt, the question has been determined by planting the seeds and the reversion of some of the seedlings settled the point.

The first variety of this species that obtained wide celebrity was introduced by Mr. R. Prince of Flushing, Long Island, about 1820. He obtained it from Mrs. Isabella Gibbs, who discovered it growing wild in North Carolina in 1816 and brought it north.

Prince propagated it and called it the Isabella, and ten years later he published a treatise on the grape. It is cultivated now to a very limited extent, and is found too late for high latitudes.

The Isabella has played its part in rearing a numerous family of children, but they being of the southern type of the *labrusca*, but a few are in favor North.

One of them, the Adirondac, was introduced in 1852, though of surpassing excellence, did well for a few years in favorable localities, but from inherent defects was generally discarded, even in its native home on lake Champlain. The Catawba, a native of North Carolina, was brought to notice by Major John Adlum, of Georgetown, D.C., who published the first American work on grapes in 1825, under the quaint title of "A Memoir on the Cultivation of the Grape." In it he claimed that in introducing the Catawba he conferred a greater benefit upon the American nation than he would have done by paying off the national debt. In a very short time the Catawba was extensively cultivated along the Ohio river, and Nicholas Longsworth, of Cincinnati, manufactured large quantities of wine of it. From disease overtaking the vine, the extensive vineyards of southern Ohio were destroyed, but in the lake region of central New York it found a more congenial home and is now flourishing, supplying our markets in winter with a grape having few equals as a long keeper. The Diana, a seedling of Catawba, was introduced to public notice in 1843 by Mrs. Diana Castore, of Boston, Mass., and was quite popular for a while; though not as productive as its parent, it is considered by some to be better and is still in favor south, but mainly for its keeping qualities.

In 1849, Ephraim W. Bull, of Concord, Mass., announced the discovery of the widely famous Concord. After it had captured public favor he was asked how he obtained it and his reply was "—I was looking about for the best grape which met the necessary conditions of hardiness, vigorous growth, size of berry, early ripening, and, with these conditions, as good flavor as the wild grape affords. At the foot of a hill on a woodland path leading to the river, there I found an accidental seedling in 1843. It was very full of fruit, handsome and sweet, and the whole crop had fallen to the ground before August was out. Here was my opportunity. I planted the grapes at once and got many vines, most of them harsh and wild, but one of them bore a single bunch which I found ripe on the 10th September, 1849, six years from sowing the seed. This was the Concord."

Mr. Bull continued his efforts, and succeeded in establishing a strain of seedlings giving new grapes to the country every year. Its progeny could be numbered by the hundred, but for our present purpose only those tested here will be given, namely: varieties the result of natural variation or other parent uncertain, Moore's Early, Worden, Lady, Martha, Eva, Pocklington, Norwood, Cottage, Eaton, Rockland Favorite, and the numerous Concord seedlings of the late T. B. Miner, of New Jersey.

Varieties definitely known to be crossed with Delaware are, Duchess, Nectar, and most of the late John Burr's seedlings. With Iona are Jefferson and Highland. Allen's hybrid crosses are El Dorado and Lady Washington. Niagara is claimed to be crossed with Cassidy. Woodruff's Red by Catawba, Brighton by Diana, Hamburg.

The foreign crosses are also numerous but successful only in the south.

In 1850 Hartford Prolific was introduced by Steele of Hartford, Conn., meeting with favor, being the earliest variety then known, but the effect of dropping its berry when ripe detracted from its value as a market grape. It is still in favor north. The most prominent *labruscas* enumerated as being discovered in the first half of this century were natural seedlings, or, as called by some, "Spontaneous Hybrids." Now we shall enter the era of artificial hybridization. By this process the first successful products were given to the world in 1856 by Edward S. Rogers, at Salem, Mass. The direction of his efforts were in impregnating the Mammoth *labrusca* of New England with varieties of the species *Vitis vinifera* of Europe. As a result he retained and designated, by number, over fifty new varieties. In time several of these became the leading grapes of commerce, viz: Massasoit, Lindley, Herbert, Barry, Aminia, and Salem, the special merits of which may perpetuate his name in connection therewith for many generations. The success attending Rogers' efforts gave a surprising impetus to attempts in this direction by others. Unfortunately for Rogers his zeal was not proportionate to his means, and his valuable hybrids, which in our time would have assured him a fortune, left him comparatively a poor man.

Dr. Stephen W. Underhill, of Croton Point, on the Hudson, an enthusiast in this field, at an early day brought out several varieties by *labrusca* crossings. Those tested in Canada were Irving, Senasqua, and Black Eagle, and a Delaware cross called Croton. Further south these have stood the test of time.

The late Peter C. Dempsey, of Trenton, Ont., followed the same path, and produced Burnet, by Black Hamburg crossing. J. H. Ricketts, and the late A. J. Caywood, both on the Hudson, originated varieties of value by crossing with the *labrusca*. Rickett's crossings, mostly on the *riparia* species, now number several hundred, though comparatively few have attained prominence. The popular varieties, Delaware, Creveling, Taylor, as well as some of Rommel's productions, are claimed by some authorities as partaking of *labrusca* blood.

To conclude, this type of grapes, Cottage, Telegraph, Belvidere, Woodruff Red, Jessica, Wyoming Red, and Champion, have in recent years given us varieties prominent for early ripening, especially the Champion, which is much valued north, and still holds the palm as an extra early and profitable grape. These latter are spontaneous productions or variations of the original type by which nature, in her origin of species, has been so bountiful to mankind in the present century.

We will now have to consider briefly the *Vitis cordifolia* of our native species, known as the Frost grape, or rather its subdivision named by Michaux, *Vitis riparia*. This species is not only distributed well to the north, along the banks and islands of our Canadian rivers, but its geographical boundaries extend south and west over a great part of this continent. Nature, in this species, has supplied us with wine as well as an edible grape, readily propagated by cuttings. Dr. Despetis, in his study of the *riparia*, has noted over 300 sub-varieties, of which the Clinton is the most prominent. The Taylor, as before noted, thought to be an accidental cross with *labrusca*. has given the south valuable wine grapes in Elvira, Noah, Missouri Reisling, Grein's Golden, and Rommel's Hybrids, viz: Amber, Pearl, Transparent, Faith, July, and others. While Ricketts of Newburg, N.Y., with Clinton, produced Bacchus, Empire State, Naomi, Peabody, Pizarro, Quassaick, Secretary, and Waverly, six of these have been tested in Clarenceville and all but Bacchus discarded. Three of these flourished for a few years and then gradually dwindled out. Peabody and Waverly were exquisite in quality. Perhaps if their foliage had been sprayed by mixtures now in use other results might have been obtained. The Clinton, crosses of Arnold of Paris, Ont., have fared the same here. If some of the finest children of the *riparia* species are to be saved we must interpose with spraying mixtures.

In conclusion a brief tribute is due to prominent propagators, whom with those already named, have contributed valuable varieties to our northern grape list. The Hon. Geo. W. Campbell, of Ohio, in introduction of "Lady" has given us the most valuable extra early white variety, and will soon introduce an extra early black, to be known as "Campbell's Early." Few men have taken more interest in popularizing grape culture.

Samuel Miller, of Missouri, discoverer of Martha, still a popular white, can look back over a useful life's work in this and other branches of fruit culture. John B. Moore, of Concord, Mass., will be remembered in connection with Moore's Early: Jacob Moore, of Brighton, N. J., with Brighton amd Moore's Diamond: Jacob Rommel, of Missouri, with Rommel's Early Black. These names, with those of Bull, Rogers, Caywood, Burr, Ricketts, Dempsey, Prince, and Underhill, veterans who have mostly passed away, will survive in connection with their creations for many generations.

THE FALL AND THE WINTER BLENHEIM ORANGE.

By E. B. Edwards, Peterboro'.

I think I am beginning to understand the conflicting statements as to the Blenheim orange being called by some people a fall apple, while I called it a winter apple. Following the dry August, the whole of the apples on four or five Blenheim orange trees began to fall early in September, and the "equinoctial" of the 22nd of September stripped the trees. The fruit was large, fully ripe and colored, and showed that it would not keep at all. At the same time eight or ten other trees alongside held their fruit firmly through all the winds, and the apples on them were clearly immature, not fully grown, not colored, and hard and firm. I sent specimens to Mr. Craig. He pronounced those that had fallen to be the typical Blenheim—the others a later variety of the same. He adds, "In this instance the variation is worth perpetuating." I quite agree with him, for the later ones will keep till the end of winter, or even into May, while the early ones will hardly keep till Christmas. The difference between the two classes of trees has been noticed before, but it has never been so noticeable as this year, when the dry season ripened the earlier variety before its time, while the September rains apparently checked the ripening process in the later variety.

THE HARDINESS OF THE CANADA RED (RED CANADA).

By R. W. SHEPHERD, JR., MONTREAL, QUE.

In a paper read by me before the Farmers' Congress, at the City of Quebec, in January, 1893, and which was afterwards published in the last June number of the *Horticulturist*, I mentioned Canada Red as having proved to be a very hardy tree, after upwards of three years of trial at Hudson-on-the-Ottawa. It is extraordinary that the fact of the hardiness of this variety does not seem to have been brought prominently before the notice of fruit growers heretofore. The test of the hardiness of Canada Red, to my mind, is conclusive. The orchard at Mount Victoria, Hudson, Ont., is situated within two miles of my own at Como, and I have had ample opportunity to observe the present condition of the trees of that orchard, and to know of the dreadfully neglectful way in which these trees have been cared for, ever since the death of the late Mr. George Matthews (some twenty years ago), who planted out the orchard. The farm was sold shortly after Mr. Matthews' death to a Montreal gentleman who never, I understand, visited the place, and the several tenants who have rented it, from year to year, of course never took the slightest trouble to cultivate the orchard properly, or even to prune the trees. The soil of that orchard is the poorest quality of sand, so poor that the present tenant has told me he sometimes fails to get even a crop of oats off it in dry seasons. Under such conditions it is surprising that any of the trees planted by Mr. Matthews, nearly thirty-five years ago, are alive at all. Some of the trees were obtained from Montreal, such as the Fameuse, St. Lawrence, Pomme Grise and Bourassa, and of these only a few survive. I distinctly remember Mr. Matthews saying that he bought a number of his trees at Rochester, N.Y. Among these, I think only Canada Red and some Talman Sweet survive. But the best trees by far, the healthiest and most productive, are the last named. The present tenant says he has frequently taken six barrels per tree, of good marketable apples, off them, and obtained some years four dollars per barrel. For many years the several tenants of Mount Victoria sold the Canada Red under the name of Red Spitz. I never took particular notice of this apple until four years ago, when I was struck by the fine, clean, healthy appearance of the fruit. Knowing that Red Spitz could not be the correct name, and at the same time being aware that many of the trees of this orchard were brought from the state of New York, I sent specimens to several pomologists, among others to Mr. L. Woolverton, of Grimsby, and all pronounced the variety Canada Red.

Fine specimens were sent from this province to the World's Fair in the fall of 1892, and placed in cold storage there, with other Quebec apples, and were exhibited until the disastrous fire in the cold storage building destroyed all the fruit, of 1892, in July last. No specimens of Canada Red were sent to the fair from this province in 1893.

In this connection it is interesting to quote a letter recently received from J. C. Plumb, of Milton, Wisconsin, an authority in that state on fruit. He says: "Mr. Hoxie (who was in charge of the Wisconsin fruit), brought from the World's Fair several specimens from the Canada fruit, one labelled 'Red Canada,' which is our Baltimore—

See Downing, pages 86 and 322. The tree Red Canada is much less hardy and vigorous, but bears double the fruit here, and in quality far better than the Baltimore. If the Baltimore bears well with you it is valuable. Its fruit is larger, cavity smaller, stems shorter, calyx closed, basin much more shallow than Red Canada. It bears almost entirely at the extremity of last year's shoots, which are thus enlarged at that point, making quite a bunch, where last year's fruit was borne."

I wrote Mr. Plumb and stated that the specimens taken to Wisconsin in the fall of 1893, by Mr. Hoxie, could not have come from the Province of Quebec, but probably from Ontario—and, furthermore, I am of the opinion that Downing's description of Red Canada more correctly corresponds with the fruit as grown at Hudson than that of Baltimore.

Downing, however, says "Red Canada is not now much planted on account of its small size and poor fruit." This has not been the experience of those who have grown that variety here. Under the most careless cultivation, and the disadvantageous conditions above mentioned, the fruit is, at least, *medium* in size and often above medium. It will be interesting to hear something from growers in Ontario who have had experience with both Red Canada and Baltimore.

THE SARAH RASPBERRY.

By John Craig, Horticulturist, C. E. F., Ottawa.

Sarah. Produced in London, Ont,, by Prof. Saunders, from seed of Shaffer's Colossal. Plant a moderate grower, suckering freely, and propagating naturally only in this way. The foliage seems to be intermediate between the European raspberry *Rubus idaeus* and the American *Rubus strigosus.* The canes have been affected to some extent by anthracnose, but not more than Cuthbert or Marlboro' growing alongside. Fruit large, round; drupes large, deep garnet, firm, very juicy, pleasantly acid and exceptionally rich. A few ripe berries were found last year, and this year, at the time of the first picking of Cuthbert, but the main crop did not ripen till the season of Cuthbert was over, the last picking taking place each year from the 8th to 12th August.

A striking characteristic of this variety is its habit of ripening the fruit in consecutive order and much regularity, beginning with the terminal clusters of each branch. Of course this is in a measure true of all red raspberries, but none that I know of carry the peculiarity to the same extent.

NOTES ON VARIETIES BY THE SECRETARY.

Apples.

The Talman Sweet. The Talman Sweet has great value as food for stock; the food is easier grown than carrots, and excels them as food for our horses. In the home it is highly prized by many people as a dessert apple, and those who are fond of bread and milk will find it a delicious addition to that wholesome article of diet, if first well baked in the oven. In the eastern states the Talman Sweet is considerably grown for market, because in such cities as Boston there is a special demand for this fruit. In Canada there is little use in growing it for market, because there is no demand for sweet apples in either the English or the Canadian markets.

The Talman Sweet is a native of Rhode Island. The tree is a vigorous grower, with an upright spreading top.

The fruit is thus described by Mr. Charles Downing: Form, nearly globular. When fully ripe, whitish yellow, with a soft blush on one side, and generally a line running from stem to calyx. Stalk rather long and slender, inclining to one side, and inserted in a rather wide, shallow, but regular cavity. Calyx set in a small basin, slightly depressed. Flesh quite white, rather firm, fine-grained, with a rich, sweet flavor. November to April.

As a stock on which to top graft other varieties, the Talman Sweet cannot be excelled. It is very hardy, of healthy and vigorous growth, very productive and seems to impart to the variety top grafted upon it, some of its excellent qualities. The King is usually a poor bearer, but when grafted on the Talman Sweet stock, it not only produces fruit of better quality, but it is quite productive. We are so convinced of its excellence in this regard, that, if planting a new orchard to-day, we would be inclined to plant all Talman, and later on to top-graft them with the required varieties.

Here is an article by the late Mr. Nicol, of Cataraqui, for many years one of the directors of the Ontario Fruit Growers' Association, on this very subject, which is sufficiently opportune to be inserted here.

Many of the choicest varieties of apples, such as the Northern Spy, Ribston Pippin, R. I. Greening, Gravenstein, Baldwin and King of Tomkins County, which are somewhat tender, can be grown successfully by root-grafting or by budding on common stock only in favored localities; yet by top grafting on hardy stock they can be satisfactorily grown where only hardy varieties succeed in the ordinary way.

The Talman Sweet is peculiarly adapted for this purpose. Next to the Crabs and the Duchess of Oldenburg, it is the hardiest of all known varieties. Indeed, I have found it to be quite equal to the Duchess in this respect. I have known trees of it so mutilated by cattle and horses as to be considered completely destroyed, yet, when given a fair chance, recovered and became remarkably healthy and good bearing trees. In fact, there is no kind of apple tree that will stand as much hard usage and survive. It is less particular as to soil and situation than any other kind of apple tree. It endures dry seasons better than most sorts. Its bark being of a thick, tough, leathery nature, soon overgrows almost any wound; and good, sound grafts inserted into its branches seldom fail to grow. Its growth is very much of the same habit as that of the Duchess, throwing out its branches at nearly right angles with the trunk; unlike the Spy, which forms forked crotches that readily split when the tree comes to mature age. I have never known a Talman Sweet tree split at the crotches by weight of fruit, by accumulations of ice or by wind storms. In short, it is the most enduring kind of apple tree that I know of.

It should be observed that in top-grafting any kind of apple tree, the whole top should not be cut off at once, because the too severe check is apt to kill the tree. A far better way is to make a two or three years' process of it; the first and second year grafting only each alternate side branch, and, finally, the third year grafting the top branches.

Branches into which grafts are to be inserted should not be cut off too close to the trunk, where they are of large size, but rather where they are subdivided into branches about 1 or 1¼ inches thick; then the joint quickly heals over; whereas, when grafts are inserted into the side of a large stump they are much more readily broken off.

There are now growing throughout the country a great many Talman Sweet trees—perhaps more than of any other variety of apple. I know of many instances where orchards were planted years ago, and now all that remains of them is the few Talman Sweet trees which constituted part of the selection.

The Talman is by common consent adjudged to be the best baking apple; yet it is hardly salable in any market in Canada; therefore, it is of little value beyond what is required for family use, and for that purpose one or two trees in an orchard is sufficient. If all the others were top-grafted with choice sorts there might be much more good fruit grown.

The Ben Davis. Perhaps there is no apple about which more difference of opinion exists than the Ben Davis. Like the Kieffer pear, the Crescent strawberry, the Lombard plum, and the Concord grape, we might say of the Ben Davis that, while far from being the first of its class in quality, it stands at the head for productiveness and consequent profit. The early orchardists in Ontario planted their commercial orchards with the Baldwin but now find that in many localities instead of being the most productive, it is the least so; orchardists in the western states, on the other hand, have planted the Ben Davis in their commercial orchards, and in fruitfulness at least it has not disappointed them.

In southern Ontario many of the best orchards of Baldwin have been almost barren for the last half decade of years, and it is for this reason we bring under the notice of the owners an apple which is not a failure in this respect at least. The late P. C. Dempsey, who was our director for Prince Edward county, had great confidence in the Ben Davis, and in our report for 1893, page 7, he says: "I can make more money out out of one tree of the Ben Davis than I can off fifty Kings. We have a lot of trees of the latter variety twelve years planted, and have never realized twelve barrels off them, but we have taken that many off a single tree of the Ben Davis. For market value, we find that in England the Ben Davis has sold as high as 32s. a barrel.

At our meeting in Peterborough last December, Mr. Alex. McNeill championed the Ben Davis. He said, "The Ben Davis is like a piece of cork in the fall or winter, but in the months of January, February and March, a well-grown Ben Davis is just as nice an apple as I want to eat, and I am very particular in my choice of an apple, too. As for profit, I believe there is no apple grown that will give you as much." Mr. Stenson, of Peterborough, said, "I planted seventeen trees of the Ben Davis sixteen years ago. They began bearing in six years, and have been bearing ever since. This last year I took eighty-six bushels off those trees—eighty of them good salable apples. I would sooner grow the Ben Davis at 50 cents a bushel than any other apple at $1." Mr. Stenson's method of handling them is to store them until the 20th of May, when he ships them to England, and gets the top price in the market.

On the other hand, it is urged by some apple growers, whose experience is equally reliable, that when planting an orchard we should choose varieties of better quality than the Ben Davis, because the time will come when quality must rule in the markets. At our meeting in Windsor, Mr. Elliot spoke as follows concerning this apple: "No doubt the Ben Davis sells well, but I think a man who charges his neighbor $2 for a barrel of Ben Davis robs him of $1.75. It may do very well for hotel-keepers, for one barrel of them will last a first-class hotel as a dessert apple about three months, whereas a really good apple will not last a week. If you send a boy into the cellar for an eating apple, he never brings a Ben Davis, and if your wife wants to please you with an apple dumpling, she does not choose the Ben Davis."

Mr. A. McD. Allan said at the same meeting, "Although good prices are now paid in England for the Ben Davis, it is bound to come down in value before very long. The fact is they are looking into the quality of apples in those markets more closely than the consumers in our own markets."

The estimation in which this apple was held by our fruit committee is shown by the rating they gave it, viz., dessert, 0, cooking, 1, home market, 8, foreign market, 9; —only 18 points out of a maximum of 40.

At Chicago the Ben Davis was one of the finest looking apples shown by Idaho, Oregon and British Columbia. As grown in those quarters, the apple is twice the size of those grown in Ontario, and more highly colored; while the Spy, one of our best quality apples, is a miserable failure. No wonder the Ben Davis is the great apple of the west.

We cannot better describe this variety than by quoting from A. J. Downing's great work. He says, "The origin of this apple is unknown. J. S. Downer, of Kentucky, writes that old trees are there found from which suckers are taken in way of propagating. The tree is very hardy, a free grower, with very dark reddish brown, slightly grayish young wood, forming an erect, round head, bearing early and abundantly. In quality it is not first rate, but from its early productiveness, habit of blooming late in spring after late frosts, good size, fair, even fruit, keeping and carrying well, it is very popular in all the southwest and west.

Fruit, medium to large. Form, roundish, truncated conical, often sides unequal. Color, yellowish, almost overspread, splashed and striped with two shades of red, and dotted sparsely with areole dots. Stalk, medium, rather slender. Cavity, narrow, deep russetted. Calyx, partially open. Basin, wide, abrupt, slightly corrugated. Flesh, white, tender, moderately juicy, pleasant subacid. Core, medium to large. Good to very good. December to March.

PEARS.

The Howell. Of the pears grown for market at Maplehurst, one of the most satisfactory of its season is the Howell. Its size, freedom from scab, worm holes and other blemishes, and clear, yellow skin at maturity, combine to make it a very attractive pear for market. It ripens about the end of September, just when the Bartlett season is over. We do not know of any other variety more desirable at this season, unless we except the Duchess which is often very inferior in appearance owing to curculio knots. The Sheldon, of course, surpasses them all for dessert purposes, but the tree is not nearly so productive and the fruit is not more attractive in appearance. In the estimation of fruit growers generally, the Howell is one of the best of the varieties of American pears.

The tree is an upright, vigorous grower and very productive.

The pear is thus described by Downing: Fruit rather large, roundish, pyriform; light, waxen color, often with a finely shaded cheek, thickly sprinkled with minute russet dots and some russet patches; stalk medium length, inserted without cavity, sometimes by a ring or lip sometimes in a small cavity; calxy open; segments recurved; basin rather large and uneven; flesh whitish, juicy, melting, brisk, vinous. Quality very good; season, September, October.

It originated with Thomas Howell, of New Haven, Conn.

The Dempsey. On the occasion of our visit to the Trenton Apple and Pear Experiment Station, Mr. W. H. Dempsey pointed out to Prof. Hutt the original tree of the Dempsey pear. It was of good size and thrifty growth, but had been annually robbed of its young wood for propagating purposes. It was about 20 feet high and the trunk 6 or 7 inches in diameter. We brought with us a fine sample, which by measurement was 4 inches in length and 3¼ in thickness at its widest part. The pear, at the time of writing, is firm and good for keeping some time yet, thus covering a season in the market, when the Bartlett is entirely cleaned out, unless kept in cold storage. It so much resembles Bartlett that it could be well sold for that pear, but its flesh is essentially different, though scarcely inferior.

The pear is the product of many experiments in hybridizing conducted by the late P. C. Dempsey, father of the present experimenter, and we are glad that so good a fruit bears his name. The tree was grown from a seed of the Bartlett and fertilized with the Duchess d'Angouleme. It is an upright, good grower; foliage large, glossy, dark green, resembling both parents.

The Anjou. The late M. P. Wilder, who was for so many years at the head of the American Pomological Society as its revered President, has the honor of introducing to American fruit growers this excellent early winter pear, the Beurre d'Anjou.

Its name would seem to imply that it is of French origin, but it is said to have first originated in Belgium, whence it was brought into France, and it soon became one of the most popular varieties in that country.

This pear was also the favorite of the late Patrick Barry, former President of the Western New York Horticultural Society. In January, 1888, he exhibited the most magnificent specimens of Anjou pears that we ever saw, at a meeting of that society held in Rochester on the 26th of January. They were quite large and yellow. He had kept them in a cool room,, and they were in prime condition for eating, though a month after their usual season. "As an early winter pear the Anjou is unequalled," were the words of this veteran pomologist at that time. Had the Anjou a red cheek like that of the Clairgeau, it would be generally accepted as a perfect market pear, but its dull color, at least until it yellows up, is somewhat against it in the market.

The late E. Moody, of Lockport, N.Y., remarked, at the same meeting, that with him the Anjou had suffered considerably from the blight, but that otherwise he considered it a magnificent variety, and worthy of being planted much more extensively than it is at present. Others stated that they had not found it to be any more subject to blight than other varieties, and with this the experience of the writer agrees.

"The Anjou is one of the most profitable pears for the orchard," was the testimony of the late A. J. Downing, "bearing abundantly and evenly, whether grafted upon the pear or upon the quince stock." With regard to the profits of growing this or any other kind of pears, however, times have wonderfully changed during the last twenty years. In the year 1869, Mr. P. T. Quinn published a book on pear culture, the reading of which filled the writer with dreams never to be realized. He stated in that book that pears would bring an average of some $20 or $30 per barrel, and that they were, by all odds, the most profitable of all fruits.

Certainly, at such prices, they would be, but the cold reality is a little different nowadays, when we find the average is scarcely $3 per barrel, for our finest varieties.

In this connection it will be of interest to include Charles Downing's description of the Anjou pear: Fruit, large, obtuse pyriform; stem, short, thick and fleshy, inserted in a cavity, surrounded by russet; calyx, very small, open, stiff, in an exceedingly small basin, surrounded by russet; skin, greenish, sprinkled with russet, sometimes shaded with dull crimson, and sprinkled thickly with brown and crimson dots; flesh, whitish, not very fine, melting, juicy, with a brisk, vinous flavor, pleasantly perfumed; very good to best. October, November.

GRAPES.

Moore's Early. One of the best black grapes for northern sections is the Moore's Early. Both the wood and the fruit ripens early, two all-important characteristics; while the quality is pretty good, superior to its competitor in early ripening, the Champion, if not quite as productive. It is hardier than Concord, which variety it precedes from two to three weeks in time of ripening, and by some is thought to excel it also in quantity.

The bunch is medium, shouldered, compact; the berry, large, round, black, with a heavy blue bloom, and the vine is hardy and moderately productive. After the fruit is ripe the berries are inclined to drop, and when gathered it soon deteriorates in quality.

The Moore's Early grape was raised by Mr. J. B. Moore, Concord, Mass., and was first exhibited before the Horticultural Society of that State, in the year 1872, gaining the first prize for the best early grape.

Mr. R. B. Whyte, of Ottawa, says that with him the Moore's Early ripens from the last of August to the middle of September; and he would place it first among the black grapes suitable for the Ottawa Valley.

Mr. Robson, of Lindsay, considers it one of the best black grapes for his section, on account of its quality and its earliness.

Mr. John Craig, Horticulturist, Experimental Farm, Ottawa, writes: The Moore's Early ripened in 1890 at Ottawa on Sept. 6th—five days after Champion Last year all varieties in this vicinity were a week to ten days later in ripening than usual. Moore's Early matures Sept. 14th—seven days after Champion. Its good points are its early ripening habits, hardiness and freedom from mildew. Among its weak points may be noted, slowness of growth, and, on some soils, lack of vigor, light bearing habits and perishable character of fruit As an amateur variety in northern localities and for near market, Moore's Early has much value. As a commercial variety in grape-growing sections, I should not care to advocate the planting of this in a large way for profit.

Mr. D. Nicol, Cataraqui, says: What I have seen of Moore's Early grape, I believe it is well suited for this district. It ripens earlier than the Worden, and the fruit is of large size; quality as good, yet I cannot say it is more productive.

Mr. Thos. Beall, Lindsay, says: Every grower of grapes for family use should have a few vines of Moore's Early; but the quantity of fruit produced is so small, it is worthless as a market variety.

The Wilder. Every year it is becoming more and more a question with the fruit growers, which he should rank first in importance, quality or droductiveness, when he is planting for profit. The Concord grape for instance, is one of the most productive varieties that grows, but its quality is second-rate, and consequently the market price is every year tending downwards. Last year many growers had to content themselves with 1¼ to 1½ cents a pound, a very low figure in consideration of the care of the vineyard, the trellising, harvesting, and purchase of baskets. Should this tendency continue, there will soon be no profit at all in growing such varieties. But with grapes of such excellent size and quality as the Wilder, there is no danger of low and unremunerative prices. By common consent this grape is counted one of the most showy of American out door black grapes, for exhibition purposes, and one of the best for dessert purposes.

At Maplehurst this grape has not been largely planted for market, because it is somewhat subject to mildew and rot, and is not always productive. But since we have learned so well the benefit of using copper sulphate in our vineyards to destroy the fungi, there is no reason why we should not henceforth plant this variety more freely. To get the best results it should be trained on the renewal system, having two arms of old wood on the first or lower wire, and training the young growth upward. Every year the alternate uprights are to be cut out to the bud nearest the old wood, and those left will bear freely.

The Wilder, or Rogers' No. 4, was raised by Mr. E. S. Rogers, of Salem, Mass., and it is counted one of the best of his numerous hybrids, being not only large and beautiful in fruit, but the vine is also vigorous, hardy and productive.

The following description is from the Bushberg catalogue:

Bunch large, often shouldered, sometimes weighing a pound; *berry* large, globular; *color* dark purple, nearly black, slight bloom; *flesh* tolerably tender, with a slight pulp, jucy, rich, pleasant and sweet. Ripens with, and sometimes earlier than the Concord, keeping for a long time. The vine is vigorous, healthy, hardy, and productive; roots abundant, of medium thickness, straight, with a smooth, moderately firm liber; canes heavy and long, with well developed laterals. Wood firm, with a medium pith.

The Agawam. For the dessert dish, nothing is more attractive than a collection of grapes, assorted according to color, and on this account care should be taken in planting to include about an equal quantity of red, white and black varieties. It does not matter whether for home use or for shipping, for the buyers in the large towns also have eyes for the beautiful, and will buy such packages as contain assorted colors sooner than such as have all one color.

Of red varieties, the following list was approved of by the New Jersey Horticultural Society in 1884, in order of excellence: Brighton, Agawam, Delaware, Salem, Catawba, Jefferson and Lindley. Of these, the Brighton is a general favorite, but of too thin a skin to endure a long shipment. In our opinion, the Brighton is a delicious grape. The Delaware is tender and sweet; it is usually esteemed to possess the highest quality of any grape, and truly its delicate little berries of diminutive size seem just suited to place before royalty itself. At Chicago, the Delaware was sold in small five-pound baskets, and in three-pound pasteboard boxes, and was in great demand; while, later in the season, the Catawba took the precedency, owing to its keeping qualities; a grape which does not ripen well at the north, except in favored localities.

The Agawam is a seedling grape, raised by E. S. Rogers, of Salem, Mass. The vine is vigorous and productive, but in wet seasons it is liable to mildew, though not as badly as No. 22 (Salem); the bunch is variable in size and shape; berries large, roundish, dark red or maroon; flesh tender, juicy, sweet, with a native musky aroma. This is considered by many one of the best of Rogers' seedlings, but in Canada we give greater preference to the Lindley for market purposes, as being earlier and more productive, and of a brighter shade of red.

The experience of fruit growers in various parts of the province concerning this grape is shown by the following extracts from the letters just to hand:

Mr. E. Morden, Niagara Falls South, writes, "The Agawam is a very large red grape, of quality inferior to the Salem, but not quite as liable to mildew.

Thomas Beall, Lindsay, writes, "The Agawam grape is profitably grown here, principally because of its excellent keeping qualities and its fine flavor. We do not place it on the market until November, or in December, when the cheaper varieties are gone. A good price is then obtained for them. The best results seem to be obtained when grown near some variety producing more pollen.

Mr. A. M. Smith, St. Catharines, writes, "The Agawam has been very subject to mildew with me, otherwise I consider it as good as any of Rogers' red grapes."

Mr. Alexander McNeill, of Windsor, writes, "The large berry and thick skin of the Agawam make it an excellent keeper and shipper. The vine is vigorous and usually healthy, but the fruit is subject to rot. This, together with its loose and usually small bunch, render it unprofitable at even three times the price of the Concord. Those who want a fairly good grape in December or January, and will spray carefully, will find the Agawam worth planting."

Mr. John Craig, of Ottawa, writes, "The vine is a strong, free grower, inclined to mildew; bears profusely; bunch and berry large; color, dark crimson; very rich; juicy; of first quality; skin, thick; keeps well without losing its flavor. In this section it does not ripen to perfection every season. Recently it has been shown that the Agawam is one of those varieties which does not perfectly fertilize itself, and, therefore, needs to have some strong bloomer, like the Concord, growing with it to produce the best results."

Mr. M. Pettit, of the Winona Experimental Station, writes, "The Agawam, on heavy soil, with the free use of sulphur, is the most satisfactory grape I grow. It is a regular and heavy bearer, a good shipper, a good keeper, and good demand in the market.

STRAWBERRIES.

Of thirty varieties in my experimental plantation the *most productive* in the season of 1894 were Williams, Bubach, Haverland, Saunders and Enhance. The *earliest* were Michels Early, and Bubach 24, both of which gave their first picking on June 10th, while most of the others did not give their first picking until the 18th.

Bubach 5 is one of the best market berries; and always averages larger than any other variety. It is pistillate, very productive, and endures the drouth well.

Saunders compares favorably with Bubach in size and excels it in productiveness. The fruit is large, conical, slightly flattened; color, deep red; glossy; flesh red; flavor, sprightly and agreeable; excels Bubach in quality.

HINTS FROM SISTER SOCIETIES.

TRANSPLANTING ONIONS.

Mr. C. B. Waldron, of the North Dakota Experimental Station, says that his attempts to grow onions in the ordinary way have generally failed, but he has succeeded well by transplanting. For example, on April 4th, seeds of a number of varieties were sown in shallow boxes in the greenhouse. When the plants came up the average stand was about 500 to the square foot. May 23, these small onions, with a diameter slightly greater than that of an ordinary wheat straw, were transplanted to the open ground 5 inches apart in the drill. On the same date and on similar soil, seed of the same varieties were sown. The rainfall from above date until June 30 was 3.62 inches, for July 2.21, and for August 2.72.

The onions were harvested September 22. At this time all of those which had been transplanted were mature, while of the others only the early pickling sorts and the Extra Early Red had thoroughly ripened. Only 5 varieties out of 26 planted made a satisfactory stand from seed. The following table gives the relative yields from the two methods of culture:

RELATIVE YIELDS OF ONIONS TRANSPLANTED AND GROWN FROM SEED.

Variety.	Weight of transplanted.	Weight of non-transplanted.
Early Red	71	14½
Red Victoria	53	7
White Victoria	56½	11
Silver White Ætna	65	13
Yellow Globe Danvers	47	12

The author estimates that about 84 square feet of glass are necessary to furnish plants sufficient for one acre, and that the cost of transplanting an acre is about $10.

When the saving of seed is taken into account, it is doubtful if the expense of growing a crop in the old way is less than by the method of transplanting. Transplanting onions produced large, regular, mature bulbs, greatly excelling the others in keeping and market qualities.

FRUIT PACKING AND GRADING.

The following hints on this important theme of packing and grading is from the Report of the Pennsylvania Horticultural Society.

Fruit and garden producers are much in need of a general system for grading. We must have legislation and co-operation as well as the enforcement of such laws enacted by our legislature. To-day, we have men authorized to inspect flour, coal, oil, whiskies, etc., placing their official mark on each article inspected. These are bought and sold by the grade as marked upon each case. Fruit is used extensively every day in every state of our Union, and yet no system of grading or inspection is in force.

Grading fruit is not simply separating the better from the inferior ; there is another grading which is pre-eminent, uniform measure. Our old standard measures of a half bushel and peck have become so old-fashioned they are a mere figure-head with many fruit dealers. The per cent. of fruit and vegetables thus measured is exceedingly small. Barrels, crates, baskets, berry-boxes, etc., are now used to carry fruit and ship to distant markets. No fault is to be found with the box, barrel or crate, but in the matter of sizes specified regulations should be adopted. I have found baskets holding $\frac{5}{8}$, $\frac{1}{2}$ and 7-16 bushels. Each of these sizes is a basket of the original intention. Probably no wrong was intended, but the matter of sizes has opened the doors wide for the perpetration of fraud. The inexperienced, thinking a basket means a half bushel, offer their produce at so much per basket. The buyer brings out his $\frac{5}{8}$-bushel basket and wants it filled round full. The farmer figures 20 bushels will fill 40 half bushel baskets, but when he counts the baskets only 32 are found. A dispute at once arises, but being sold and bought by the basket, the producer takes his pay and departs. The dealer fills his 7-16 bushel or 14 quart basket and then has 45 6 baskets. The dealer paid for 32 but now sells $45\frac{5}{7}$, gaining $13\frac{5}{7}$ baskets on the 20 bushels. Frequently such dealers are the loudest complainers.

We need wise legislation and the co-operation of good, honest merchants, backed by every horticultural association in the country, against tricksters of this kind. Barrels, crates, baskets, boxes, etc., should be of established sizes and so easily distinguishable that every buyer and seller knows what he buys and sells. The size of pint and quart berry boxes sometimes returned in crates is often surprising. Every manufacturer has his own notion about the size, or else in his calculation must figure on liquid measure. Crates have never been returned to me with boxes of different makes of the same size.

Careful picking, careful handling, scrupulously clean baskets and boxes, free from last year's mould and stains, add largely to quick sales and better prices. Often one poor over-ripe berry prevents the sale of the box, one inferior peach lessens the value of the whole basket; one bruised, brown spotted pear rots the whole basket. As there is no established schedule, I present my idea through observation at home and abroad. Fruit grading should be either for the home market or those most distant. First-class fruit should be the largest, most highly-colored and most perfectly matured growth. Second class, fair size, with only such slight defects as debar from the first-class. Third-class, wormy, scabby, irregular. Culls, such as will not pass as third-class and rather better than need be for cider vinegar. One schedule will not do for all fruits. As the fruit differs so will its schedule.

To have a first-class pear we must try and grow it, have it well developed, gather it at the proper time, and be well colored in ripening. Study the market, using judgment in the assorting for shipment or the home market. The fruit packed in a crate should be alike in time of ripening. Never pack pears too highly ripened or the whole box may be lost. Always sell the highly ripened pears at home. Have first, second and third class, grade them carefully and wrap in thin paper to prevent chafing. Never use boxes too large; a half bushel is large enough. The sides of the box should be planed to prevent discoloring of the fruit; then if properly handled the fruit will open beautifully, and you will stand a good chance of receiving remunerative prices. Never ship wormy or scabby pears; sell them at home. Neither ship with broken stems.

Peaches should be graded when the season permits. Varieties differ in size, so the number of peaches depends on the size to fill a half-bushel basket. When they run very large I grade them 60 to 70, 70 to 80, 80 to 90 or 100, 100 to 150 peaches to the half bushel. Always have the fruit uniform from top to bottom; never put bitter, insipid, imperfect fruit at the bottom and top off with a few good peaches and a sprig of leaves—your brand will soon be known in the market. Apples are mostly sold by the barrel, having a layer at top and bottom with culls and wormy fruit between. Such apples are of but little use on the English market, for there the fruit must be uniform and well colored. It is said that three wormy apples would condemn the whole barrel. Good apples always command a fair price either at home or abroad. The continent and English market prefers red apples. In America, red, green or yellow are desirable in localities, and every grower must study the wants of his market, as only those who make apple culture a study and a business can know how much they will feel the tender touch of man's kind and proper treatment. Whether we shall have poor, scrubby, wormy, or fine well-grown, richly colored, delicious fruit, such as the ancients would have offered to their gods, is now a matter of choice with each fruit-grower.

Graded fruit or vegetables are noticed by prince and peasant, and if the peasant knows how to grade, the prince is ready to buy simply because it appears nice and catches the eye. In many instances it may not be the quality as much as the care in preparing for market. Citrus fruits represent a class of which there is no better graded in the world. Especially is this true of Florida and California oranges. The fine grading of this class of fruit was brought about a dozen years ago by a packing house on the St. John river, Fla. As they were constantly buying, they were able to grade and wrap the fruit. This soon became an established business throughout the states. Since orange shipping from Florida to Savannah first took place, the grading of the orange has taught shippers all over the country a lesson, until California ships its fine plums, apricots, peaches, pears, and other fruits, so that now it is almost as common on the stands of fruit vendors as our own.

Fancy Fruit.

The art does not belong to everyone of putting up fruit in fancy style so as to command prices above the ordinary. The first point is, of course, to produce such fruit by extraordinary care in cultivation, manuring, pruning, etc. The great importance of an attractive label should also be considered; white paper with blue lettering is attractive, and should have printed upon it the grower's name and the nature of the goods, grade, etc. This can easily be pasted on each wooden package.

Picking, grading and packing choice fruit is a work of art, and unless a man has it in him, he cannot learn it by reading. All fancy fruit should be wrapped in dainty wrappers, white tissue is best, with the grower's name in bright blue ink. How beautifully such a label will blend with the scarlet and gold of a fancy Crawford peach! Who could pass a box of peaches so wrapped, and placed in shallow crates in layers and rows, without buying them? while the same person might pass a box or basket of unassorted fruit without notice. The proper grading is best done by having a packer for each grade, and when a basketful is turned out on the packing table each one selects fruit to suit his class, as, for example, extra selected, selected and 1st class; and what remains is sold as 2nd class, if at all. A Californian packer gives the following as his system of grading peaches for market; and in reading observe that instead of the term we use, he employs the primes, extras, and standards:

"Before closing I will, in as few words as possible, explain my system of grading for market. Primes, or first grades, are packed 48 to 52 to the box six by four, top and bottom, or permissibly seven by four at the bottom. They must be nearly uniform in size, so as to pack square and snug, fitted in just so tight that the filled box may be set on end without its contents falling out, this holds good moreover of each and every grade.

"Extras, or second grade, go 56 to 63 to the box, two rows of seven by four each, or, for the higher number, a bottom row of seven by five.

"Standards, or third grade, should not exceed 80 peaches to the box, eight rows of five each top and bottom; anything running smaller than this I rate as culls, to be used for domestic purposes or sale to the canner or dry house."

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ANNUAL REPORT

OF THE

AGRICULTURE AND ARTS ASSOCIATION

OF ONTARIO

1894.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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FORTY-NINTH ANNUAL REPORT

OF THE

AGRICULTURE AND ARTS ASSOCIATION.

1894.

To the Honorable John Dryden, Minister of Agriculture :

I have the honor, on behalf of the Council of the Agriculture and Arts Association of Ontario, to present the Report of their proceedings for 1894, the Reports of the Shire, Hackney and Clydesdale Horse Associations for 1893, the Report of the Dominion Shorthorn Breeders' Association, the Dominion Ayshire Breeders' Association, the Report of the Spring Stallion Show, the Report of the Provincial Plowing Matches, the Report of the Fat Stock Show at Guelph for 1894, a list of the graduates of the Veterinary College for 1894, and the Treasurer's statement for 1894. Also, appendix showing Prize Awards for Horses and Cattle at the Industrial Exhibitions held at Toronto in 1893 and 1894.

I have the honor to be,
Your obedient servant,

HENRY WADE,
Secretary.

TORONTO, December 31st, 1894.

LIST OF OFFICERS.

President,	Wm. Dawson, Vittoria.
Vice-President,	Jonathan Sissons, Barrie.
Secretary,	Henry Wade, Toronto.
Treasurer,	David Kirkwood, Brampton.

Directors :

Division No. 1.—D. P. McKinnon, South Finch.
No. 2.—W. C. Edwards, Rockland.
No. 3.—Joshua Legge, Gananoque.
No. 4.—B. Mallory, Frankford.
No. 5.—W. J. Westington, Plainville.
No. 6.—J. C. Snell, Edmonton.
No. 7.—Nicholas Awrey, Hamilton.
No. 8.—J. C. Rykert, St. Catharines.
No. 9.—Wm. Dawson, Vittoria.
No. 10.—James Rowand, Dunblane.
No. 11.—Robert McEwen, Byron.
No. 12.—Albin Rawlings, Forest.
No. 13.—Jonathan Sissons, Barrie.

FORTY-NINTH ANNUAL REPORT

OF THE

AGRICULTURE AND ARTS ASSOCIATION

OF ONTARIO.

ANNUAL MEETING.

The annual meeting of the Agriculture and Arts Association was held at Agricultural Hall, Toronto, commencing at 7.30 p.m., March 29th, 1894.

The President, Jas. Rowand, M.P., Dunblane, occupied the chair. Following is a list of members of the Council present :

Division No. 1, D. P. McKinnon, South Finch ; Division No. 2, W. C. Edwards, M.P., Rockland ; Division No. 3, Joshua Legge, Gananoque ; Division No. 4, B. Mallory, Frankford ; Division No. 5, W. J. Westington, Plainville ; Division No. 6, J. C. Snell, Edmonton ; Division No. 7, N. Awrey, M.P.P., Hamilton ; Division No. 8, J. C. Rykert, Q.C., St. Catharines ; Division No. 9, Wm. Dawson, Vittoria ; Division No. 10, Jas. Rowand, M.P., Dunblane ; Division No. 11, Robt. McEwen, Byron ; Division No. 12, Albin Rawlings, Forest ; Division No. 13, Jonathan Sissons, Barrie.

The Secretary read the following communication :

Henry Wade, Esq., Secretary Agriculture and Arts Association :

Dear Sir,—I have the honor to inform you that the following gentlemen have been elected to represent their respective Divisions on the Board of Agriculture and Arts Association during the ensuing term, as provided in the Agriculture and Arts Act, R. S. O., 1887.

No. 1 Division,	D. P. McKinnon	South Finch.
No 2 "	W. C. Edwards, M.P	Rockland.
No. 3 "	Joshua Legge	Gananoque.
No. 4 "	B. Mallory	Frankford.

Yours respectfully,

C. C. James,

Deputy Minister of Agriculture.

The Secretary read the minutes of the meeting held in Guelph on the 6th December, 1893, and on motion of Mr. LEGGE, seconded by Mr. SISSONS, they were adopted and signed by the President.

Communications were read by the Secretary from T. R. MELVILLE, Secretary South Grenville Agricultural Society, Prescott, and from A. SHAW, Secretary of the Midland Central Fair, Kingston, both asking to have Provincial Sales of cattle held in their respective localities, in case such sales are established.

Also a letter from JOHN MCCORKINDALE, Secretary of the Guelph Fat Stock Club, asking the Council to waive any claim they might have on the sum of $25 that the Ontario Agricultural College had promised to pay for accommodation at the last show.

On motion of Mr. SISSONS, seconded by Mr. LEGGE, all three of these communications were referred to the Finance Committee that was to be appointed.

President ROWAND then stated that before the election of officers took place he desired, first, to welcome the new members of the Council, although there was only one stranger amongst the number, Mr. B. Mallory, as Mr. McKinnon had formerly represented his Division on this Board, and the other two members have been re-elected. "I desire before leaving the chair to thank the members for their uniform courtesy to me for the last year. It has been a year of results for our Province, especially at the World's Columbian Exposition at Chicago, where Ontario had taken a stand that we are all proud of. I had the pleasure of visiting the Exposition, and the Agricultural Congress, held at the same time, as one of your delegates, and I can assure you I was very proud of my country. With regard to routine of the affairs of this Council, we have held our Spring and Fall Shows, and plowing matches, and also have had the usual amount of registration of live stock of different kinds. Whether we can reach out and do more work in the future depends on circumstances, as there seems to be a new and disturbing element after us, and not only us but the politicians. The clergy are all that have yet escaped. I wish again to express my gratitude for your kindness in electing me your President, and for your attention during the last year. I now call on this Council to elect their President for the present year."

ELECTION OF OFFICERS.

Moved by J. C. RYKERT, seconded by J. SISSONS, that WILLIAM DAWSON, of Vittoria, be President for the ensuing year. Carried.

Moved by A. RAWLINGS, seconded by J. LEGGE, that JONATHAN SISSONS, of Barrie, be Vice-President for the ensuing year. Carried.

Mr. DAWSON, the newly-elected President, then took the chair, and said: I have much pleasure in thanking the Board for the honorable position they have placed me in. If I can do anything to help the cause of agriculture, and to make this Association as useful as it was in the past, I shall be very willing to do so. The Agriculture and Arts Association in its life time has done much for this country, and no doubt the results of this work have culminated in our success at Chicago. I again thank you for the honor you have conferred on me, and will do my duty to the best of my ability.

Mr. J. SISSONS, the newly elected Vice-President, also thanked the Council for the honor done him. He thought the Association had done grand work in the past, and although certain parties would like to see the Association done away with for no good reasons, he thought that this Association was just entering upon what might be a career of very great usefulness again to this province. It would be a great mistake to allow this organization to step down and out.

On motion of J. C. SNELL, seconded by W. C. EDWARDS, it was resolved that the following members be a committee to strike the standing committees for the current year: Messrs. Legge, Sissons, McEwen, Rykert, Rawlings, and the mover.

The Secretary then read his Report for 1893.

REPORT OF SECRETARY.

Gentlemen,—As has been my custom since being your Secretary I now present my Report of the business done in the office and at the various shows held under your supervision. One of our principal duties is the registration of stock.

Registrations.

	Males.	Females.	Total.
Horses—			
Clydesdales, Vol. VIII	97	122	219
Shires, Vol. I	7	5	12
Draught horses, Vol. II	9	11	20
Hackneys	12	5	17
	125	143	268
Cattle—			
Ayrshires, Vol. II	230	319	549
Herefords, Vol. I	62	82	144
Polled Angus, Vol. I	27	46	73
Devons, Vol. I	11	14	25
	330	461	791
Sheep—			
Dorset Horned, Vol. I	...	...	30
Swine—			
Berkshires	506	567	1,073
Yorkshires	515	587	1,102
Suffolks	38	80	118
Chester Whites	110	122	232
Poland Chinas	38	80	118
Tamworths	85	110	195
	1,292	1,546	2,838

You will comprehend from this table that the entries fluctuate according to the demand for the animals. In 1892 we recorded 559 horses; in 1893, 268, thus showing a decrease of 291. We account for this by the dulness of trade in horses and the objectionable decree issued by the Secretary of the Treasury at Washington, compelling all horses to be recorded in the American book before they can pass the lines free.

In cattle we have increased from 525 in 1892 to 791 in 1893, making 266 more, showing that the cattle industry is improving, especially in Ayrshires. In swine registrations we have increased enormously, showing that this industry has boomed considerably during 1893. In 1892 we recorded 1,912, while in 1893 we recorded 2,838, an increase of 926 head.

Herd Books.

During 1893 we published the Seventh Volume of the Clydesdale Stud Book of Canada, containing the pedigrees of 216 stallions and 234 mares, also 94 pedigrees in the Scotch Appendix, containing 205 pages. This work cost for printing alone $517.43. We also published the Second Volume of the Swine Record, a book of 400 pages, containing pedigrees of Berkshires, Improved Yorkshires, Suffolks, Chester Whites, Poland Chinas, and Tamworths. This cost for printing alone $643; both of them cost $1,160.43, and we sold $521.43 worth, leaving the rest of them to supply future customers. The printing is a very slow performance, and it takes nearly all the time of one clerk correcting proof. This year we print the Third Volume of the Swine Record and Second Volume of the Ayrshire Herd Book.

REGISTRATION AND HERD BOOK RECEIPTS.

	Registration fees.	Herd Books sold.	Total.
1880	$1,216 82	$ 13 50	$1,230 32
1881	1,704 44	846 00	2,550 44
1882	1,672 00	696 60	2,368 60
1883	1,848 50	759 50	2,608 00
1884	1,688 00	899 00	2,587 00
1885	1,879 75	296 00	2,175 75
1886	1,398 00	215 25	1,613 25
1887	1,314 50	148 65	1,463 15
1888	1,716 50	401 00	2,117 50
1889	1,838 76	390 50	2,229 26
1890	2,356 95	432 90	2,789 85
1891	2,311 03	373 05	2,684 08
1892	2,386 50	756 25	3,142 75
1893	2,752 25	521 43	3,273 68

I insert this table to show the fluctuations in registrations, also the steady increase. The year 1880 was the last year of Mr. J. R. Craig's secretaryship, and 1881, from May 1st, my first year. 1885 was the last year we took registrations for the Canada Shorthorn Herd Book. The total fees that year were $2,175 ; in 1886, $1,613.25 ; in 1887, $1,413.15, while in 1893 the amount collected was $3,273.68. This increase is accounted for by your Secretary, with your permission, starting to record horses of different kinds, more breeds of cattle and swine, also starting different Live Stock Associations. These details are given more for the information of the new members than for the older ones, who are more familiar with the workings of this Association.

SEVENTH ANNUAL SPRING STALLION SHOW, 1893.

This important show of the various breeds of stallions was held in the Drill Shed, Toronto, on March 8th and 9th, under the auspices of the Agriculture and Arts Association, and Clydesdale Horse, Shire Horse and Hackney Horse Associations, and was again very successful ; the Drill Shed being crowded to its utmost capacity. Comfortable seats were provided by the kindness of the City Council, and the use of the Drill Shed loaned us by the courtesy of Lieut.-Col. Otter, D.A.G.

There were 17 entries of thoroughbred stallions ; 18 of carriage or coach stallions ; 13 of standard-bred roadsters ; 9 of Hackney stallions ; 1 Suffolk Punch stallion ; 9 of Shire stallions ; 27 of Clydesdale stallions and 13 entries of Canadian-bred Clydesdale stallions, or 107 horses altogether.

Financial Statement.

RECEIPTS.

1893.		
March 9th.	Gate receipts, catalogues and entry fees	$441 30
"	Hackney Association grant	20 00
"	Shire " "	20 00
"	Clydesdale " "	20 00
	Balance	1,245 08
		$2,266 38

EXPENDITURES.

1893.		
March 9th.	By prizes	$1,770 00
"	Expenses of Show	496 38
		$2,266 38

Leaving $1,245.08 to be made up by this Association.

TENTH PROVINCIAL FAT STOCK SHOW, 1893.

This well-known exhibition was held on the 6th and 7th of December in the commodious Victoria Rink in the city of Guelph, and was the largest ever held in Canada.

It was under the joint management of the Agriculture and Arts Association, the Guelph Fat Stock Club and the Sheep Breeders' and Swine Breeders' Associations. The entries were as follows :

Cattle.

We had 10 entries of Shorthorns, 2 of Herefords, 1 Polled Angus, 2 Galloways, 2 Devons and 34 Grades, and about 25 from the Ontario Agricultural College (for the sale) ; making a total of about 76 head, against 57 in 1892.

Sheep.

Class 8.	37	entries..............	Cotswolds, Lincolns and Leicesters.
Class 9.	41	"	Oxford, Hampshire or Shropshires.
Class 9.	32	"	Southdown, Dorset or Merino.
Class 11.	47	"	Grades.
	157	against 106 in 1892.	

Swine.

Class 12.	32	entries	Berkshires.
Class 13.	13	"	Poland Chinas.
Class 14.	3	"	Yorkshires.
Class 15.	15	"	Chester Whites.
Class 16.	21	"	Tamworths or Jerseys.
Class 17.	16	"	Suffolk, Essex or Victoria.
Class 18.	29	"	Grades.
	129	against 46 in 1892.	

The premiums offered at this Exhibition were very satisfactory, and in the case of the exhibits of pure-bred sheep and swine, a departure was taken from the old established rule, that all animals should go to the block.

Financial Statement.

	Receipts.			Expenditure.	
1893.			1893.		
Dec. 15th.	Gate receipts and entry fees	$566 70	Dec. 11th.	By premiums paid........	$2,064 00
"	Sheep Breeders' Ass'n grant	480 00	"	" expenses..............	320 83
"	Swine Breeders' "	448 00			
"	J. L. Grant & Co., special	25 00			
	Balance	865 13			
		$2,384 83			$2,384 83

Leaving $863.13 to be made up by this Association.

CLYDESDALE HORSE ASSOCIATION.

The eighth annual meeting of this Association was held at the Albion Hotel, Toronto, on the 7th of February last, and was well attended. Unfortunately the President, Wm. Davies, was not able to attend, so the Vice-President, Mr. Arthur Johnston, ably presided in his place. The annual report was accepted, which showed that only 229 horse had been recorded in 1893, a decrease of 219 from 1892 ; it was therefore decided not to print the eighth volume until the end of 1894. This falling off is accounted for by the dulness in the horse market and the arbitrary rule of the American Secretary of Agriculture to not accept certificates from the Canadian Book, for custom house purposes at the frontier. This Association contributed the handsome sum of $540 to the Spring Stallion Show held here, and $25 each to the Toronto Industrial, Winnipeg Industrial, Western Fair of London and the Hochelaga and Montreal spring shows. This Association had 136 paid members for this year, and the seventh volume was sent to members.

SHIRE HORSE ASSOCIATION.

The fourth and fifth annual meetings were held at the Agricultural Hall on the 6th of February last. There was a fair attendance. It was presided over by John Gardhouse, jun., of Highfield, the President. The Secretary reported that there were 352 animals recorded for the first volume. It was decided to hold back this volume for another year. This Association contributed $20 for 1892 and $20 for 1893 to the Spring Stallion Show. Twelve animals were recorded.

HACKNEY HORSE SOCIETY.

This Society held its annual meeting in March. It was presided over by the late John Hope, as President. Eighteen members renewed their subscriptions and $30 was given to the Spring Horse Show, and $60 to the Toronto Industrial for special premiums. Seventeen animals were recorded during the year. Canadian Hackneys took nearly all the prizes at the World's Columbian Exhibition this year.

DOMINION SHORTHORN BREEDERS' ASSOCIATION.

Although not in affiliation with this Association, it is intimately connected with it, and an office is furnished to them free of charge, but no grant was given them this year. They recorded 3,470 pedigrees and received $3,787.45 in fees. They had 398 paid up members and sent out the eighth volume to members. The annual meeting was held on the 9th of February, at Shaftesbury Hall.

DOMINION AYRSHIRE BREEDERS' ASSOCIATION.

The seventh annual meeting was held at Shaftesbury Hall on the 7th of February. It was well attended. Mr. Wm. Stewart, jun., of Menie, was elected President for 1894. Several interesting papers were read on Ayrshire subjects. Five hundred and forty-one animals were recorded in 1893 ; 48 members paid their fees, and the members were justly elated at the success of their breed of cattle at the Columbian Exhibition. Mr. M. Ballantyne, of St. Marys, was the retiring President. The show rings in Canada were also well filled with Ayrshires.

DOMINION HEREFORD BREEDERS' ASSOCIATION.

Mr. F. A. Fleming, of Weston, is President of this Association. One hundred and forty-four animals of this breed were recorded during the year, and two herds, one owned by Mr. F. A. Fleming, of Weston, and one owned by Mr. Smith, of Compton, Quebec, were exhibited at the World's Fair. There are now 26 members.

POLLED ANGUS AND DEVON CATTLE.

This Association records both these breeds of cattle, but no associations have, as yet, been formed by their breeders.

DORSET HORNED SHEEP.

We have only recorded thirty of these, as most of them are sold to the United States.

SWINE BREEDERS' ASSOCIATION.

This Association consists of the breeders of all kinds of swine. Mr. F. W. Hodson, of London, is Secretary, and I am recording Secretary and editor of Volume II. of the Swine Record, containing 2,205 pedigrees of six varieties of swine, which was sent out to members of this Association, and is for sale at $2 per volume to non-members. By looking back to the sheet containing the statistics of pedigrees recorded you will find that there has been a great increase in the number of swine pedigrees recorded—2,838 of all breeds against 1,912 in 1892, or a difference in favor of 1893 of 926 head, showing that the swine industry has been a very important one during the last year.

ONTARIO VETERINARY COLLEGE.

This Association granted veterinary diplomas to about 160 students who graduated from the Ontario Veterinary College, under the presidency of A. Smith, V.S., R.V. S. Ed. We also presented some silver medals as prizes to the students. The total expense to this Association was $136.55.

PLOWING MATCHES.

Four of these were held in the different sections of the province. Districts 1, 2 and 3 did not claim their share this year.

Districts 4, 5 and 6 held a plowing match under the management of Jas. Haggarty, W. J. Westington and J. C. Snell, near Lindsay, in the County of Victoria.

Districts 7 and 8 held a plowing match under the management of J. C. Rykert, N. Awrey, M.P.P., and Wm. Dawson, on the Asylum farm, Hamilton.

Districts No. 10, 11, 12 and 13, under the management of Jas. Rowand, M.P.; R. McEwen, A. Rawlings and Jonathan Sissons, held two matches, one near Barrie and one at Stratford. All these matches were successful and cost the Association $600.

WORLD'S COLUMBIAN EXPOSITION.

The exhibit from the Province of Ontario, proved, as was hoped for, to be a great success. After very careful selection 58 horses were taken from Ontario; they were awarded 40 prizes, amounting to $3,935, three diplomas, 10 silver and two gold medals, a good showing.

Cattle. We took 46 Shorthorns, 47 Ayrshires, 14 Herefords, 13 Galloways, 13 Devons, 9 Holsteins and Jerseys; 142 in all. Our Shorthorns won $2,205 and three gold medals. Our Ayrshires from Ontario took $925 in prizes, and the Ayrshires from Quebec $930, or $1,855 out of $2,035 offered, leaving only $150 to the American exhibitors. Fat stock was awarded $75.

Sheep. We took fifteen car loads, in all 310 animals, the pick of Ontario. We had 36 Shropshires, and amidst a large competition took $1,115. We had 57 Southdowns and were awarded $1,605. In Lincolns and Leicesters we took $2,025; in Dorset Horned we took $765; in Oxford Downs, $470 and Hampshire Downs $60; total $6,040. This was made up of 61 first prizes; 47 second prizes; 46 third prizes and 35 fourth prizes. The fat sheep, 42 in number, were all shown by John Rutherford, of Roseville. He won $662 in cash and a silver cup valued at $100.

Swine. We exhibited 68 altogether, chiefly Improved Yorkshires and Tamworths, with a few Essex and Suffolks, and took about $1,300 in cash prizes or $20 per animal.

Poultry. We exhibited 1,061 birds and took in premiums $2,633 and sold $1,050 worth while on exhibition.

Dairy Test. This was undertaken by the American Shorthorn Breeders' Association at their own expense, to show that the Shorthorns were good milkers as well as good beef cattle. After much searching we sent five cows over to help in this test. One owned by F. Martindale, of York, gained $40 in the second test and $20 in the third test. The other cows were sent by Thos. Ballantyne & Sons, Stratford; J. F. Davis, Glanworth; Wm. Grainger, Londesboro', and Herbert Wright, of Guelph. They all did well and helped to establish the fact that Shorthorns are one of the best combination cows to be found. These gentlemen deserve the thanks of the people of this province by generously doing without these cows for practically a year. The thanks of this Council are also due to our worthy Commissioner, Mr. N. Awrey, M.P.P., who was proposed by this Board for that important position. We feel proud that a member of our Council has had the honor to fill this position, and that he has filled it in so creditable a manner. I also personally thank this Council for giving me leave of absence for short periods, to act as Secretary to the Commissioner, and assist in taking forward our magnificent exhibits of live stock. The experience is worth a good deal to me.

Farm Products. It is needless to enumerate the victories we had in cereals, in the Dairy and in the Apiary department. It is sufficient to say that we fairly astonished the American exhibitors.

OFFICE WORK.

This has increased gradually from year to year, as more live stock associations have been formed. During the year that has passed 6,999 letters and post cards have been sent out, besides prize lists and catalogues for both the Fat Stock and Spring Stallion Shows. These have also been printed and revised at this office, as well as the herd and stud books already mentioned and the Annual Report to the Government. We got 1,000 of these to distribute to our exhibitors. Taking all things into consideration, this has been the busiest year that your Secretary and his staff have had since he accepted the position in 1881.

All of which is respectfully submitted.

H. WADE, Secretary.

STOCK SALES.

At this stage of the meeting a delegation from Kingston asked for an interview with the Council.

Mr. LEGGE explained the wishes of this delegation, and said, before introducing them, he would read a copy of the resolution passed at Guelph in December relating to stock sales.

On motion it was adopted that at the next meeting of the Council they take into consideration the establishment of stock sales, and that the Finance Committee be instructed to put in the estimates the sum of $1,000 for this purpose, with a view of establishing one in the east and one in the west of this province.

Mr. LEGGE then introduced a deputation from eastern Ontario, consisting of Mr. Shaw, Manager of the Central Fair, Mr. W. Harty, M.P.P., Kingston, and Dr. Preston, M.P.P., for South Leeds, who presented the claims of the eastern portion of the province in connection with a proposed stock sale under the auspices of the Association.

A deputation from Guelph, consisting of Mayor Smith, and Messrs. John I. Hobson, James Millar, H. Wright and D. McCrae, urged the claim of Guelph as the point where the western sale should be held.

It was moved by Mr. AWREY, seconded by Mr. SISSONS, and carried, that a fat stock show be held at Guelph, providing that place furnish good accommodation.

The delegation thanked the Board and retired.

Mr. AWREY then delivered an interesting address on the Ontario Exhibit at the World's Fair at Chicago, and claimed that the province had become well and favorably known by the successful displays made by Ontario exhibitors.

Mr. J. C. RYKERT spoke of the difficulties in the way of making a successful exhibit, yet he was of the opinion that no country had a better display, and the result of the work done at Chicago was to make Canada be spoken of in the highest terms, as not only holding its own, but as being far in advance of almost any other country in the world.

At 9.30 p.m. the meeting adjourned.

FRIDAY, March 30th, 1894, 10 a.m.

The Council resumed with President DAWSON in the chair. The members were all present with the exception of Jas. Rowand, M.P., and W. C. Edwards, M.P., who had to return to their duties at Ottawa.

COMMITTEES FOR 1894.

The Special Committee appointed to name the general committees for the year begged leave to report the following names, viz :

Executive : Legge, Awrey, Westington, Mallory and Rykert.

Finance : McEwen, McKinnon, Rawlings, Awrey, Sissons and Rykert.

Stock Show : Snell, Legge, McEwen, Rawlings, Sissons and Wade.

Short Horn Herd Books : Snell, Edwards, Rowand, Westington, Mallory and Wade.

Central Farmers' Institute : Rowand.

All of which is respectfully submitted.

March 29th, 1894. JOSHUA LEGGE, Chairman.

On motion of Mr. LEGGE, seconded by Mr. AWREY, the report on Committees was carried.

REPORT OF FINANCE COMMITTEE.

The committee on finance beg leave to report as follows :

Your committee has examined the auditors' report of the treasurer's statement for 1893, and recommend that the same be adopted by the Council.

The auditors' report shows a balance in the treasurer's hands, on the 31st December, 1893, of $3,709.66.

Your committee has examined the receipts and expenditures since January 1st, 1894, and find that the receipts are $621.55 and the expenditures $1,506.93 up to March 30th, leaving a balance in the Treasurer's hands of about $2,649.50.

Your committee recommends the account of Alexander & Cable, for Veterinary Diplomas, amounting to $90, be paid.

Your committee would recommend that Mr. A. S. McVity be paid two months' salary amounting to $100, in addition to the amount already paid on account of his long illness.

All of which is respectfully submitted.

March 30th, 1894. ROBT. McEWEN, Chairman.

On motion of Mr. McEWEN, seconded by Mr. SISSONS, the finance committee Report was adopted.

A letter of protest was then read from J. C. Boyd, Secretary of the Ontario Association of Trotting and Pacing Horse Breeders, against giving their gold medal to Graham Bros., instead of to Dr. S. E. McCully, on the grounds that the judges were not competent to adjudicate on this award.

Mr. RAWLINGS thought that as this was not a full meeting of the Joint Horse Show Committee, it had better be left over till the next meeting of that committee.

Mr. AWREY said it will be a year next January before this committee meets and it may not be the same one. Here is a medal that was given upon certain conditions ; the judges decided in a certain way on the stock. Because Dr. McCully did not get the first prize, is this Association to be dictated to by one or two men who form part of another Association ? If so, we had better go out of existence. I would advise the Board to abide by the decisions of their judges and grant the medal, and let us suffer the after consequences, if any. I will stand upon my rights as a member of this board to do exactly what we promise to do. Those men did the judging; I do not know whether they are right or wrong. I know nothing about the horses. I do not think we are here to decide that Dr. McCully's horse is the faster of the two. The judges decided that Mr. Graham's horse was entitled to the Sweepstakes, and I think we ought to give it to him.

On motion of Mr. SISSONS, seconded by Mr. McKINNON, it was resolved that the decision of the judges in the matter of Graham *vs.* McCully in regard to a medal given by the Standard Bred Horse Association be sustained.

The Secretary made a report of the receipts derived from the Spring Horse Show, just held in the drill shed:

From gates, two days	$210 25
From 115 entries	115 00
Catalogue sales	20 00
From Clydesdale Horse Association	250 00
From Shire Horse Association	20 00
	$615 25

Also one gold medal for Industrial Exhibition Association; one gold medal for Trotting Horse Association, and one gold medal for Agriculture and Arts Association.

A deputation from the Veterinary College consisting of Dr. A. Smith, Principal, and Dr. C. H. Sweetapple, secretary, then waited on the Council.

Dr. SWEETAPPLE then read the following letter:

TORONTO, March 29th, 1894.

H. Wade, Secretary Agricultural and Arts Association:

SIR,—The members of the Ontario Veterinary Association of Ontario request the Agriculture and Arts Association of Ontario to allow any fines that may be imposed on parties for infringing the Agricultural Act of this Province bearing on the practice of Veterinary Science, to become the property of the prosecutor.

Yours respectfully,
C. H. SWEETAPPLE,
Secretary and Registrar,
Ontario Veterinary College.

Dr. SWEETAPPLE also spoke on the question as follows: We want to prevent unqualified parties from assuming the title of "veterinary surgeon" unless they are properly qualified according to the Act, and in connection with prosecutions we want the fines to go to the prosecutor. Probably the Association would employ a prosecutor, the fines being his emolument. Our Association does not want the money; we only want to see the Act enforced.

Mr. AWREY said that it was practically giving the fines to the Veterinary Association and that instead of them paying the prosecutor a salary, the fines coming to the Association would practically be his salary.

Dr. SWEETAPPLE said that Mr. Awrey was correct, but that if the Agriculture and Arts Association would appoint the prosecutor they would be perfectly satisfied.

Mr. AWREY asked if they had suffered much by the Act not being enforced. Can you state that there are two men in the province using the title?

Dr. SMITH answered that the public were suffering greatly from unqualified practitioners. They are running a college in this city which gives a diploma in three weeks for the amount of $10, which college maintains that it is chartered by the Government. They call themselves "veterinary dentists," and they can easily pass themselves on to the public as veterinaries. We do not wish to prevent skilful men trying to cure animals, but we do not want them to use the term "veterinary surgeon," and assume a right they should not have.

Mr. WADE asked Dr. Smith if he did not think one-half of the fines would be sufficient for an informer.

Dr. SMITH: That amount might do if the correction was made.

Mr. SISSONS said he would be willing to let this man have all the fines.

MR. LEGGE said that some years ago this matter came up by a petition from the veterinary surgeons, asking that no one should be allowed to practice except duly qualified graduates of a veterinary college. It was then opposed by the Council, especially by Mr. Drury, who said they had a clever man in his neighborhood. This request does not appear to be exactly on these lines.

Dr. SMITH : No, it is entirely different. It is not going to hurt any one that does not say he belongs to a veterinary college when he has not been a graduate.

Mr. AWREY said he would suggest that Dr. Sweetapple and Dr. Smith would give their personal promise, that there would be no advantage taken by their Association. That there should be an understanding with this Board, that in case where they prosecute and succeed in getting a fine, the fines shall be paid to this Association first, according to statute ; it then be handed to the Veterinary Association to do what they liked with it, to give to the prosecutor or keep it ; but by no way to commit this Association to any system of prosecution,—so that we can stop it if they exceed any promise they have made. It is distinctly to be understood that the Veterinary College employs the prosecutor.

Copy of understanding as drawn up between the Agriculture and Arts Association and the Ontario Veterinary College.

TORONTO, March 29th, 1894.

An understanding was arrived at on application of Dr. Sweetapple, Secretary, for the remission of the fines made by Magistrates throughout the province, that the amount of the fine after being paid to the Agriculture and Arts Association be handed over to the Ontario Veterinary College to do what they liked with it. The idea being that it be paid to the prosecutor.

Mr. LEGGE : In reference to the resolution that was adopted at our last meeting held in Guelph, regarding the stock sales at the meeting, it was decided that we should hold two stock sales ; one in the west and one in the east, for which, we asked the Government for $1,000. It has been reported that we will not receive that amount. It can be received yet by a supplementary grant, as I was informed by some parties last night, if this Council still thought it was necessary. We have been advocating this scheme for some years, in connection with a Spring Show in Toronto, but have never had accommodation provided. Now the eastern section of this province is very anxious to have a sale of this description under the auspices of this Association held in the east, so that they can make selection from the stock on exhibition for their own herds.

Mr. LEGGE then moved, seconded by Mr. RYKERT, that in accordance with the resolution passed in Guelph at our last meeting, and as we have had an application from both Kingston and Prescott in the east for such sale, that we do hold one such sale in the east and one in the west of Ontario, the accommodation for both sales to be provided for by the place in which it is held.

After considerable discussion relative to the advisability of holding such sales, now that the Government had not granted the $1,000, the following amendment was moved by Mr. W. J. WESTINGTON and seconded by Mr. MALLORY : That these sales be abandoned for the present year. Carried.

In answer to Mr. McCorkindale's letter that was referred to the Finance Committee, Mr. AWREY moved, seconded by Mr. J. SISSONS, that the Secretary of this board be instructed to notify Prof. Mills of the Ontario Agricultural College, to transmit to him the sum of $25 appropriated by the Minister of Agriculture, as compensation to this Board for loss of admission fees to the skating rink, to enable the sale in connection with the College to take place during the afternoon of the last day of the Fat Stock Show in Guelph. Carried.

The meeting then adjourned.

JOINT MEETING OF STOCK COMMITTEE.

March 29th, 1894, Drill Shed, Toronto, 10 a.m.

Present, Jas. Rowand, M.P., President, Dunblane; W. C. Edwards, M.P., Rockland; J. Miller, A. Johnston, John Davidson, Alex. Cameron, Peter Christie, A. Rawlings, B. Mallory, Wm. Dawson, A. Major, Robt. Davies, R. Graham, W. J. Westington and R. Ness, M.P., from Quebec. The President occupied the chair.

The Secretary, Mr. H. Wade, then explained that at the annual meeting one year ago it was resolved that animals born in this country, out of imported mares, should be shown as Canadian bred, as well as animals that had no imported mare in their pedigrees, thus necessitating a division in the prize list, allowing only imported horses to show in one class, and Canadian bred ones in another. This rule caused dissatisfaction amongst the exhibitors, and this meeting is called to settle the matter.

Mr. R. Miller then spoke on the question and urged that the progeny of imported mares be allowed to show with imported animals, ending by moving, seconded by A. Johnston, that animals descending from imported mares be allowed to show amongst imported animals.

Robt. Davies, President of the Clydesdale Association, opposed this resolution on the ground that the matter was settled at the annual meeting over a year ago, that the prize list had been published and entries made under these conditions, and that it would be a dangerous precedent to establish in changing the section at the eleventh hour.

Mr. J. C. Edwards, of Rockland, also spoke against the change, saying that the catalogue had been printed, and to change at this hour would make it worthless, besides putting the Agriculture and Arts Association in a position in which they might have to defend lawsuits.

A. Johnston and others advocated the change.

Mr. Rowand, the President, argued very forcibly against the change, and it was moved in amendment by A. Rawlings, seconded by R. Davies, that it would be most unwise and dangerous to change the classification in the prize list at this late hour. The amendment was carried on a division that was very close. The joint meeting then adjourned.

JOINT MEETING OF THE AGRICULTURE AND ARTS, CLYDESDALE SHIRE AND HACKNEY ASSOCIATIONS.

Toronto, January 24th, 1894, 2 p.m.

Members present: Agriculture and Arts Association—Jas. Rowand, J. Legge, J. C. Snell, Jonathan Sissons and A. Rawlings. Clydesdale Association—R. Davies, R. Graham, R. Miller, R. Beith, Geo. Cockburn, W. D. Sorby and John Davidson. Shire Association—J. Gardhouse, President. Hackney Association—R. Davies, Vice-President. Ontario Trotting Horse Association—S. E. McCully, M.D., President.

The Secretary read the minutes of the meeting of last year; also the minutes of the Clydesdale meeting held in the morning, giving the terms of partnership.

Moved by R. Miller, seconded by J. Sissons, that the Prince of Wales prize be given for Hackneys as sweepstakes. Carried.

Moved by J. Legge, seconded by J. C. Snell, that we accept the proposition of the Clydesdale Association as to partnership, and that the show be held on Wednesday and Thursday, the 28th and 29th of March. Any dispute will be left to the Directors on the grounds.

JUDGES.

Moved by J. C. SNELL, seconded by A. RAWLINGS : that two judges be appointed in all classes, and in case of a dispute the Directors to call in a referee.

Thoroughbred : A. Wilson, Toronto ; Wm. Hendrie, Hamilton ; Dr. Smith, V.S., alternate.

Carriage or Coach : A. A. Choate, Port Hope ; Morton Plank, V.S., Uxbridge ; Robt. Bond, alternate, Toronto.

Standard-bred : Same as Carriage.

Hackneys : John Gibson, Denfield ; J. F. Quinn, V.S., Brampton ; Dr. Grenside, V.S., alternate, Guelph.

Shire and Suffolk Punch : John Boag, Ravenshoe ; Richard Gibson, Delaware ; J. Warrlow, alternate, Owen Sound.

Clydesdale : John Duff, Rockwood ; Arthur Johnston, Greenwood ; R. Beith, M. P., referee, Bowmanville.

Moved and seconded that R. Davies and H. Wade be a committee to wait on the Mayor to ask the city to prepare the Drill Shed for the exhibition, and to prepare the programme for exhibits. Entries to be in by the 15th of March.

Moved by ROBT. DAVIES, seconded by J. LEGGE, that prizes be given for the best shod heavy draught horses on exhibition. 1st prize, $10 ; 2nd prize, $7 ; 3rd prize, $5. Judges on Clydesdale horses to act. Carried.

Moved by J. SISSONS, seconded by J. LEGGE, that an evening show be held, providing the light be sufficient.

Ribbons to be given out at the night show for those that have been judging during the day.

ONTARIO PROVINCIAL FAT STOCK SHOW.

On the 15th day of May a Provincial Fat Stock Show Association was again organized in the city of Guelph. The Association is composed of delegates elected by the following bodies :

The Agriculture and Arts Association was represented by seven delegates, viz., J. C. Snell, Edmonton ; A. Rawlings, Forest ; R. McEwen, Byron ; J. Sissons, Crown Hill, Joshua Legge, Gananoque ; Wm. Dawson, Vittoria, President of the Agriculture and Arts Association, and Henry Wade, Secretary of the same body,

The Sheep Breeders' Association and the Dominion Swine Breeders were represented by five delegates, viz , John Jackson, Abingdon ; John Kelly, Shakespeare ; S. Coxworth, Claremont ; J. E. Brethour, Burford ; F. W. Hodson, London.

The Guelph Fat Stock Club was represented by four delegates, viz., Jas. Anderson, J. I. Hobson, J. McCorkindale, Jas. Millar, all of Guelph.

Mr. J. C. SNELL was unanimously elected President of the Club for the year 1894.

Mr. Henry Wade, Secretary of the Agriculture and Arts Association, was by common consent chosen Secretary.

Mr. JOHN JACKSON then submitted the following agreement for the following year : That our joint Committee compose the Ontario Provincial Fat Stock Association for 1894 ; that the Agriculture and Arts Association be represented by seven delegates, the Dominion Swine and Sheep Breeders' Associations by five, and the Guelph Fat Stock Club by four.

That the Guelph Fat Stock Club provide suitable and ample accommodation. This shall include the provision of a suitable building, well lighted by day and night, and containing an ample water supply conveniently located in the building; sufficient hurdles to properly enclose the animals in pens of a suitable size; ample feeding troughs for each pen; enough straw to bed the animals comfortably and keep them clean.

The Dominion Sheep Breeders' Association agree to provide $500 towards the prize list and the Dominion Swine Breeders' Association, $500, on condition that the agreements entered into by the other Societies and the enactments of the meeting be faithfully carried out.

The Agriculture and Arts Association will provide a sum of money which, when added to that provided as aforesaid by the other Societies, shall be sufficient to make the prizes in all classes equal to those offered by this Association in December, 1893. The sums thus contributed by the Agriculture and Arts Association shall be $830 for cattle, $185 for pure bred sheep, $310 for pure bred swine, $236 for grade sheep, $98 for grade swine, and $114 for poultry, in all $1,773, besides silver medals offered in prizes by the Agriculture and Arts Association.

Special prizes given by private parties or Societies shall not be included as a part of the grant given by the Agriculture and Arts Association, but shall be duly chronicled in the prize list.

The Agriculture and Arts Association further agrees to pay all expenses, except as previously or hereafter provided, and collect all receipts.

All the income arising from the Show shall be the property of the Agriculture and Arts Association, except the entry fees received from breeders of pure bred sheep and swine, which at the close of the show shall be paid over to the Treasurer of the Dominion Sheep and Swine Breeders' Association.

The Sheep and Swine Breeders' Associations shall pay the expenses of their delegates.

Each director of the Sheep and Swine Breeders' Association shall be furnished with a complimentary ticket, and the members and directors of the Guelph Fat Stock Club shall enjoy the same privileges as heretofore.

In case all the prizes in the pure bred sheep and swine departments are not paid out, the proper proportion of such unpaid prizes shall be repaid to the treasurer of the Dominion Sheep and Swine Breeders' Associations.

General Rules and Regulations.

The exhibition will open at 8 a.m., December 11th, and close at 10 p.m., December 13th, 1894. The exhibitors will be allowed to remove animals after 4 o'clock, p.m., on the 13th. Admission will be charged until 10 o'clock of the 13th.

COUNCIL OF AGRICULTURE.

Minutes of meeting held in the board room on September 11th and 12th, 1894.

Present: Messrs. William Dawson, President (in the chair), A. Rawlings, R. McEwen, W. J. Westington, Jonathan Sissons, Joshua Legge, D. P. McKinnon, N. Awrey, M.P.P., J. C. Snell, B. Mallory and the Secretary.

The Secretary read the minutes of the last meeting, which, on motion of Mr. Awrey, seconded by W. J. Westington, were adopted.

The Secretary then read the copy of a letter he sent to the Hon. John Dryden, Minister of Agriculture, complaining that the report containing the prize awards at the three principal exhibitions held in 1893, as prepared carefully in this office, had been struck out by the Printing Committee, as stated in a letter from C. C. James, Deputy Minister of Agriculture, dated July 30th, 1894.

On motion of J. C. SNELL, seconded by JONATHAN SISSONS, the following resolution was carried: That the Council of Agriculture and Arts Association, having learned that by order of the Printing Committee of the Ontario Legislature, part of the Annual Report of the Association, which gave a record of the prizes awarded to pure bred stock at the three leading exhibitions in the province, has been omitted from the Report of 1893 just published, beg leave to call the attention of the Minister of Agriculture to the great importance of continuing the record of awards, which this Association has maintained since its inception. This is a matter of history and of vital importance to the stock breeders of the province, and this Council hereby requests that the awards of 1893 be published in the report for 1894, together with the awards of this year, and that in future these records be continued in the reports in a more abbreviated form so as to reduce the expense as much as possible, consistent with a clear record.

Mr. Philip Jamieson appeared before the Council with a request to allow him to lease the second flat of this building, and he submitted the following offer:

September 12th, 1894.

GENTLEMEN OF THE COUNCIL,—I have now been your tenant for a great number of years and have always happened to come into the breach at the right time, while, at the same time, you have always acted just, reasonable and kind to me.

For some time past I have found myself a little cramped for selling space, and now desire to make an offer for the flat which you now occupy, thinking it might be to our mutual advantage, as I am led to understand your offices are not up to the present modern style. I have the information that first class offices, both commodious and modern, can be obtained at a rental far below the offer I herewith present, viz., One Thousand Dollars ($1,000) per annum in addition to my present rental, and to expire at the same date as my present lease. All I desire in return for this liberal offer would be for you to take out the partitions and give me the four outside walls.

Yours faithfully,

PHILIP JAMIESON.

P.S.—Referring to the last paragraph, I will take out the partitions at my own expense.

PHILIP JAMIESON.

Mr. Jamieson's request was referred to the Finance Committee.

Several communications were read from horse breeders asking that in view of the financial depression the fees for recording Clydesdales, Shires and draught horses be lowered.

These letters were referred to the Herd Book Committee.

A circular was read from Ald. Thompson asking that a deputation be sent from this Council to the Deep Waterways Convention.

Moved by J. LEGGE, seconded by W. J. WESTINGTON, and carried: That the communication of J. E. Thompson in reference to Deep Waterways be received, and that N. Awrey, M. P. P., be appointed a delegate to attend the convention on the 17th instant, to represent this Council, and that the secretary notify the chairman of the convention.

The following letter of resignation was read:

BRAMPTON, Sept. 6th, 1894.

To the Members of the Council of the Agriculture and Arts Association:

GENTLEMEN:—I hereby tender my resignation as Treasurer of the Agriculture and Arts Association of Ontario in consequence of ill-health.

GEO. GRAHAM.

On motion of D. P. MCKINNON, seconded by JOSHUA LEGGE, it was resolved: That the communication received from Geo. Graham *re* his resignation as treasurer be referred to the finance committee. A special committee consisting of Messrs. Snell, Rawlings, Sissons, McEwen, Westington, President Dawson and the mover and seconder were also appointed to report at the meeting of this Council to-morrow, on the published report of the Ontario Commissioner to the World's Columbian Exposition.

A letter was also read from H. B. Small, Secretary of the Department of Agriculture at Ottawa, in answer to a petition sent asking that aid be given to enable Toronto to hold a Dominion Exhibition in 1895, saying that the Government find it impossible to accede to the request. The Council then adjourned.

Thursday, 9 a. m.

The Council met according to adjournment, the same members being present.

The Herd Book Committee presented the following report:

"That in the matter of registration fees for Clydesdales, Shires and Draught horses, the fees be reduced to $1 to members and $2 for non-members.

J. C. Snell, Chairman.

On motion of J. Sissons, seconded by J. C. Snell, Mr. W. F. Stewart, was appointed secretary of the Draught Horse Association in place of A. S. McVity, deceased.

The special committee appointed to consider the report of the Ontario Commissioner to the World's Columbian Exposition, beg leave to report, that having examined the published report of the Commissioner on the work committed to his charge, this Council desires to express its sense of appreciation of the great importance and advantage to the province of Ontario of the excellent display of the products of the province in live stock, agriculture, in horticulture and manufactures, as well as those of our mines and forests, made at Chicago; and this Council congratulates the Hon. John Dryden, Minister of Agriculture, and Mr. Awrey, the Ontario Commissioner, upon the enterprising spirit with which they entered upon the work, and the signal success with which they carried it out; and we are thoroughly satisfied that the expenditure was a wise one, and that the results will be highly beneficial to the province.

J. C. Snell, Chairman.

On motion of Mr. Snell, seconded by Mr. Legge, the above resolution was submitted to the Council and carried.

Moved by J. C. Snell, seconded by N. Awrey, M. P. P., and resolved: That this Association deeply regrets, that owing to advanced years and enfeebled health, Mr. Geo. Graham, our esteemed treasurer, has tendered his resignation. Be it resolved that, while keenly feeling our loss as an Association in regretfully accepting his resignation, we would submit that this province also loses the services of a true and efficient servant, and hopes that his health may be so restored that the community, and more especially his family may long have his wise councils and benign presence.

On motion of J. Sissons, seconded by W. J. Westington, it was resolved: That Mr. R. McEwen and Secretary Wade be a committte to interview Col. Otter with a view of securing the new drill shed for the purpose of holding the next spring horse show.

Report of Finance Committee held Sept. 12th, 1894.

The following members were present, Messrs. McEwen, (Chairman), Awrey, Rawlings, McKinnon and Sissons.

Your Committee reports accounts to the amount of $3,201.70 as having been passed and paid at a former meeting, and certified to by the chairman, and they also recommend the approval and payment of the following, viz., $1,637.75.

Your Committee recommends that the resignation of your treasurer, Mr. Geo. Graham, be accepted conditional upon a report of our auditors to the correctness of the accounts up to the reception of the treasurer's books by his successor. And your Committee further report that in their opinion our auditors be instructed to forthwith audit the accounts and present their report to the chairman of this committee.

Your Committee beg to report that Mr. Awrey be instructed to interview the Minister of Agriculture in regard to the proposition made by Mr. Jamieson, and that if found advisable to take any action, that he request the Government architect to examine the building and give an estimate of the proposed change in the buildings and as to whether it will injure them in any way, and that if found desirable to enter into any contract, that the chairman of this Committee and Mr. Awrey be instructed to first ascertain as to the prospect of securing offices in the Government building. If such cannot be obtained, to enquire into the cost of renting other premises, and that they report the result of their investigations to this Council at a subsequent meeting to be called for the purpose, if in the opinion of this sub-committee any change can be made which will be a permanent advantage to this Association.

Your committee beg to recommend that hereafter sections 15 to 17 inclusive, of the Agriculture and Arts Act be faithfully complied with regarding the funds of this Association, and that all officials be instructed to incur no liability without instructions from this Council; and that hereafter before any accounts are paid by the treasurer or secretary such accounts be submitted to the chairman of the Finance Committee, who shall examine the same and recommend payment thereof. All of which is respectfully submitted.

ROBT. MCEWEN, Chairman.

The report of the committee was received and adopted.

The Secretary was instructed to send $150 to D. P. McKinnon for plowing match in his district; $150 to A. Rawlings for his district; $150 to J. C. Snell for his district, and $150 to either Mr. Awrey or Mr. Rykert for their district.

A letter was read from A. H. White, of Chatham, asking to be appointed treasurer.

On motion of J. LEGGE, seconded by D. P. MCKINNON, Mr. J. C. Snell was appointed treasurer. Mr. Snell in a few well chosen words declined the office, as he thought he could do more good as a member of the Council.

On motion of N. AWREY, seconded by J. C. SNELL, Mr. Jonathan Sissons was asked to accept the treasurership, and that if he accepted his duties should commence on the 1st of October next, and that he give a security to the amount of five thousand dollars, ($5,000); the security to be acceptable to the Finance Committee.

Mr. Sissons after some hesitation accepted the office.

On motion of Mr. AWREY, seconded by W. J. WESTINGTON, the Secretary was allowed a fortnight's holidays.

The meeting then adjourned.

SECOND ANNUAL MEETING OF THE CANADIAN HACKNEY HORSE SOCIETY.

This meeting was held at the Rossin House, Toronto, on 27th of March, 1894, at 8 o'clock p.m.

The following members were present: Robert Davies, Toronto; H. N. Crossley, Rosseau; Robt. Graham, Claremont; Jas. A. Cochrane, Hillhurst, Que.; Thos. Irving, Winchester; John Kemp, Toronto; Robt. Ness, Howick, Que.; Jas. Beith, Bowmanville; R. Beith, M.P., Bowmanville; R. Bond, Toronto; John Holderness, Toronto; Richard Gibson, Delaware, and Secretary Wade.

Vice-President ROBT. DAVIES occupied the chair, and said: This is the second annual meeting, and I regret to have to announce the death of our late President, Mr. John Hope, who took such an active part in this Society, and also in everything pertaining to horses and cattle. I assure you that we will feel the loss very much, for he was one of the promoters of this Association, and he will be a great loss to our Society.

The minutes of the last meeting were read by the Secretary and adopted. The Secretary also read a short report showing the business done last year, which was adopted.

TORONTO, March 27, 1894.

To the Vice-President and Directors of the Hackney Horse Society:

GENTLEMEN,—In gathering together at this annual meeting, our first thought is a sorrowful one, as we miss the well-known face of our late President, John Hope, Esq, who has so ably presided over us in the past.

This Society has not held any meeting since the last annual one, held here on the 8th of February, 1893, but the horses owned by some of the members have made a world-wide reputation at the World's Columbian Exhibition, and also at the New York Horse Show, as well as at our Canadian exhibitions.

The winners at Chicago were owned by R. Beith & Co., Bowmanville; H W. Crossley, Rosseau; G. H. Hastings, Deer Park, Toronto, and S. C. Johnson, Manilla, taking in all six first prizes, two seconds, two thirds and one fourth prize, amounting in cash to $675 and two gold medals, as well as the sweepstake prizes given by the English Society.

At the New York Fall show the Hon. M. H. Cochrane and R. Beith, M.P., were both winners, and these two gentlemen, as well as G. H. Hastings, were also winners at the Industrial Exposition in Toronto.

Several sales of these valuable horses have been made, and some new importations have been made this season.

INSPECTORS.

Our inspectors are as follows:

Ontario: John Carson, Kingston; J. D. O'Neill, V.S, London; F. C. Grenside, V.S., Guelph; C. R. McLean, M.D., Meaford; Thos. Irving, Winchester; W. D. Grand, Toronto.

Quebec: Robt. Ness, Howick, Q.; Jas. H. Cochrane, Hillhurst, Q.; Prof. McEachran, Montreal, Q.

Manitoba: T. J. Ferris, Portage La Prairie, Man.

Nova Scotia: A. S. Slip, Truro, N. S.

MEMBERSHIP.

Eighteen gentlemen have paid their membership fees for the year.

REGISTRATIONS.

We have recorded seventeen animals this year, all imported ones.

FINANCIAL STATEMENT FOR 1893.

DR.			CR.		
1893.			1893.		
Jan. 1.	To cash on hand	$55 00	March 12.	By cash to Spring Horse Show	$30 00
Dec. 31.	" 18 members fees at $5.00	90 00	Sept. 12.	" cash to Industrial Exhibition	60 00
			Dec. 31.	" cash on hand	55 00
		$145 00			$145 00

All of which is respectfully submitted.

H. WADE, Secretary-Treasurer.

ELECTION OF OFFICERS.

MR. DAVIES: Now, gentlemen, it is in order for you to elect your officers for next year, and the secretary will kindly take the chair and we will proceed to elect a president.

Moved by R. BEITH, seconded by JAS. A. COCHRANE, that Mr. Robt. Davies act as president for the ensuing year. Carried.

Mr. DAVIES: Gentlemen, I must thank you for the honor you have conferred upon me by placing me in this position, and I assure you I will do everything I can to further the interests and promote our new organization, to bring it to the front, the same as our horses are coming at the present time. They are coming to the front more and more every day, and a great army of people seem to be grasping for them, as all the qualities and good looks that are possible will be found in the Hackney. Again thanking you gentlemen for the honor you have placed upon me, I will endeavor to do everything in my power to make the Association a success. We now require a vice-president for Ontario.

Moved by JAS. A COCHRANE, seconded by ROBT. GRAHAM, that Mr. Beith be vice-president for Ontario. Carried.

On motion of Mr. IRVING, seconded by Mr. BEITH, Mr. Jas. A. Cochrane was elected vice-president for Quebec.

Moved by Mr. HASTINGS, seconded by Mr. BEITH, that the old officers be be re-elected with the exception of the one for the North-west, and in his place Mr. Rawlinson, of Calgary, Alta., be elected. Carried.

Directors: The following were elected Directors: Messrs. Kemp, Robert Graham, H. N. Crossley, George Hastings, J. Holderness, Geo. Pepper, R. Bond, Thos. Irving, Ramsay.

Representative at Toronto Industrial Exhibition: Henry Wade.

Representative at the Montreal Exhibition: James A. Cochrane.

Delegate to the Central Farmers' Institute: Robert Graham.

Auditors: Geo. Pepper, G. W. Hastings.

Mr. DAVIES: One of the members of the Association has been kind enough to donate the sum of $50 to the Hackney Horse Association to be given as a special prize at the Industrial Exhibition.

At this point the members wished to know the size of the horses to be exhibited, but after a short discussion it was finally decided, and Mr. Holderness gave $25 to be used as a second prize; then Mr. Crossley, the donator of the first, suggested that he should take $10 off the $50 and give as a third prize, which was quite satisfactory to all present.

It was decided that prizes be given as follows:

For best hackney mare, recorded in the Canadian Hackney Stud Book, in single harness and driven in dog-cart, between fourteen and three-quarter and fifteen and three-quarter hands high: 1st prize by H. N. Crossley, Rosseau, $40; 2nd prize, by John Holderness, Albion Hotel, Toronto, $25; 3rd prize, H. N. Crossley, Rosseau, $10.

Mr. DAVIES: Now, gentlemen, that matter has been settled and we have got through the most of our business, and now the members would like to have some horse talk, and I think our friend Mr. Hastings has a paper to read which will give us a little advice in this matter.

Mr. COCHRANE: It is known recently that we have a good deal of Hackney blood in Ontario, which has been in horses called coach horses. I notice in the pedigrees given in the last official catalogue of the Industrial Exhibition the name of a horse, and on making enquiries I find he is now said to be a Hackney that was imported to Cobourg some twenty years ago; then there is another horse called Phenomenon that was imported to Chatham. Now there must be a great deal of that blood throughout the country, and it seems that something ought to be done to bring that within our stud book in some way. I do not exactly approve of the inspection system; still, I think we should have a preliminary register, by which these horses could come through this appendix or this additional register into the main body of the work. I think the more thoroughbred blood we can get in the hackney on the dam's side the better for the breed. We have some great advantages in Canada, as this is the finest climate in the world for breeding this class of horses. Mr. Cochrane also referred briefly to the way the Americans were representing American Hackney horses as Canadian ones in New York, and thought it was a great injury to the reputation of the Canadian horses. There is a new society formed, called the Stallion Improving Society, and instead of going to work and establishing a stud book at once, they begin with what is called the registration, and I think it has been approved of in the press. All breeds require time and no man can begin with such cast-iron rules as are laid down at the commencement, and which must be followed out. The stud book is the outcome of the breed, therefore, I think it is a good plan to begin in some way of this kind the establishment of a registry to the appendix of our hackney stud book, a registry for mares and let the breeders prove what would be the best course to take.

Mr. **Pepper**: On the other side they admit the registry of fillies half-bred and a well-bred mare without inspection.

Mr. **Gibson**: In Shorthorns we would not take a half-bred animal, and why should we do so in Hackneys?

Mr. **Wade** at this point explained the standard of the Clydesdales, also referred to the rules adopted by the Hackney Association, and thought inspection was a great safeguard.

Mr. **Davies**: Are you satisfied to let the matter stick at what we got to have inspected mares? I think it is very good. If there are any suggestions whereby we can improve the matter, the secretary, Mr. Wade, and myself will be very glad to receive letters to improve and perfect the scheme to the best possible advantage.

Mr. **Cochrane**: Now, in order for the secretary to keep the registry of all the breeds of hackney stallions in Canada, either from lists furnished by the owners of the stallions or the owners of the mares, a small fee should be taxed.

Moved by Mr. **Jas. A. Cochrane**, seconded by Mr. **Geo. Hastings**, that the Secretary be authorized to commence a record for mares and geldings, sired by Hackney stallions, and that a fee of 50 cents be charged for that purpose; certificates not to be issued without the signature of the owner of the service stallion, and that they must be recorded before they are two years old. Carried.

Mr. **Cochrane** referred to the hiring system of stallions, and after a little discussion on the subject, it was moved by Mr. **Pepper**, seconded by Mr. **Bond**, that Mr. Cochrane, Mr. Crossley, R. Beith, John Holderness and R. Graham, be a special committee to consider the best methods of arranging with horse breeding associations for a system of horse lettings for the season. Carried.

Mr. G. H. **Hastings**, of Deer Park, then read the following paper:

THE HACKNEY HORSE.

I am pleased to have this opportunity of talking to you for a little on my favorite hobby. Some twelve years ago, while I had occasion to be a good deal about in Yorkshire, my attention was repeatedly drawn to a particular class of horse, by virtue of its wonderful symmetry and beauty of form, coupled with most graceful elasticity of action. And these qualities so fascinated me that I became very much interested to know whence they could come, for certainly this animal had a beauty and charm not possessed by either our thoroughbred or the carting horse, and as I was of opinion that those were our only two pure strains of blood and that all other horses were and must be got by crossing and re-crossing the same; it puzzled me to know how this process could result in such uniform beauty and style as we almost invariably find in the hackney horse. But a few chats with one or two of our good old Yorkshire farmers soon squared my mind on this point, and with some pride they forced on me the fact that certainly the Hackney horse was not the product of mere haphazard breeding. My views on these matters thus became somewhat enlarged, and on further examination, I found that besides the Hackney there were several other classes of horse, such as our Cleveland Bay and numerous kinds of ponies, that could lay claim to purity of blood equally with the thoroughbred or the carting horse.

Now as I believe the old notion on these matters is still very popular in this country, I propose to commence this paper by trying to prove that the Hackney horse is a pure breed, or at least is as pure as the thoroughbred, and if kept within its own bounds, is safely to be relied on for reproducing its own stamp.

In tracing back the respective bloods of the thoroughbred and Hackney, it was found that after 150 or 200 years they became so much akin on one side of the breed that it was impossible to separate them. In the earlier centuries it is believed that they were two entirely distinct breeds kept for entirely different purposes—"a race" of swift runners kept to "runne for wagers," while the other was a breed of stronger horses for long road journeys, famous for durability and fast trotting qualities. It was not till 1665 or 1670 that breeding of racehorses became a science, and it was from this period that Weatherby's famous Thoroughbred Stud Book grappled with pedigrees. Acting on the order of King Charles II., Sir John Fenwick collected horses of the very highest quality of blood to form the royal stud from which a great many of the best present day thoroughbreds and Hackneys are traceable. The breeder of the flat racers recognized in the Arabian something he wanted to give greater swiftness. He therefore drew from the horse all the qualities that would go to promote his end, mixed them with his flat racing mare and thereby obtained a swiftness not before equalled; this formed what was known as the thoroughbred. But in a similar way the breeder of the strong, durable trotting horse recognized in the Arabian something also to promote his idea of durability and fast trotting; he therefore likewise drew from the eastern breed all the qualities that would go to advance his ends, and by mixing them with his strong, hardy trotting mare produced what is now known as the Hackney. The early British horses were of two kinds, the flat racer and the trotter, they were used for totally different purposes and for a long time kept entirely distinct. But at length came the large importation of eastern horses when the two streams, as it were, each flowed through the inundation of eastern blood, but again emerged, each with additional and enhanced qualities to suit its own purpose as the thoroughbred and the Hackney respectively. The Hackney horse is the handsomest horse of all breeds; his carriage, action, and appearance are very attractive, and although of great courage he possesses a fine mild temper, and the breed has the greatest pluck and vastest staying power of any horse in the world.

Description of the Hackney.

Now that I have touched on the early history of the hackney, I wish before dealing with its more recent development, to pause for a little and consider what are some of the chief points that go to make a model hackney. It is indeed not an easy task to put into words one's ideal of this animal, for it is a thing easier and more able to be felt than described. It is like a fine picture. You can feel its beauty more than you can describe it. You may have two animals almost the same size, and even with nearly the same shapes, yet the one may be a pure loveable hack, and the other a commonplace, lifeless brute. Take a farthing and compare it alongside a half-sovereign. One finds them much the same in size, color and general appearance, yet the one is worth hundreds of the other. It is made of different stuff, and has a different ring with it. And so in our pure-bred Hackney there is always some mysterious electric fire that distinguishes it from all other horses of its own size and shape, and gives to it a value that no other horse can have; and unless you can feel this subtle beauty and value it can never be described to you. Of course, as is generally known, a hackney should be a short-legged, powerful little horse, standing from 15.1 to 15.2 hands high, with neck and head well sprung from shoulder. The head should not be overly small, and should be fairly broad between the eyes—at least horses of this shape will be found safer and more useful. Eyes must be full and bright, and ears not over long but very active. Neck ought to be light and fine as it approaches the head, but it should not be too long since this gives a "blood" or "coaching" impression. Then the shoulders must be deep and the back well sloped. This is the great point in any light-footed horse—more particularly the Hackney. Short, straight shoulders are good for nothing, and must be avoided at all hazards. The back, next, ought to be somewhat short, ribs well sprung from backbone, with strong, well developed muscles along each side, forming a hollow along the centre; the hind quarters should not be too long, but broad and muscular, with thighs well let down to the hocks. There should be a gentle droop in them, and the tail must not come straight out from the back like that of a thoroughbred or Cleveland. The droop in the quarters gives a much more graceful general outline, besides giving more leverage to the muscles of the thighs. A truebred nag, whenever walking or trotting, or if ever spoken to, should carry its tail right out. This denotes plenty of nerve force, and animals lacking this quality are good for nothing as Hackneys. The legs, as I said before, must be short and powerful, with large hocks and knees, and plenty of muscle above, and as much bone below as can possibly be got. This, however, must be short and flat. A proper Hackney has never a long cannon bone. Then the pastern joints should be large and very deep set; small, puny joints are of no use, and generally break down before the animal is half aged. The pasterns ought not to be very long, but should be broad and powerful, and well set back. Feet should be a good medium size, rather deep in hoof. Hair and skin should not be too fine, as the animal is not as tough if this quality is developed too much. Then, as regards color, we may safely assume that any color with the above shapes and the nerve quality of the nag will do, but for my own taste I like a hackney best of a black-chestnut or dark brown. This, I always think, is peculiarly its own color. Then, of course, he must move straight both in walk and trot and the higher the action all round the more money will he always be sure to fetch. Now, these are some of the chief points to be sought for in a model Hackney, and in selecting it is well to keep them in view. But in our anxiety to procure the shapes we must not forget that it is possible to have almost all these to perfection and yet not possess a real true nag. As, I said before, there is an electric fire about a Hackney of the proper sort that makes him the essence of all horses. From the tip of the ear to the last hair in his tail he is the model of symmetry and beauty. Quiet and affecticnate in the stable, there is yet in his composition that something which, at the merest word or touch, can electrify him into the liveliest and and brightest of animals. It is this quality above all that we must try to find in the Hackney, and when you do find it, all other horses will then appear dull and common. Without this they cannot walk or trot like a nag. It was this quality that in the good old days carried the English lords and squires to Parliament, travelling 60, 80, or 100 miles at a stretch. A nag, it was thought, could never be asked to do too much. Possessing such properties of endurance, strength and activity, the Hackney is thus valuable in almost any capacity. He is a good servant to the farmer, and invaluable as a riding or driving hack. Though not as large as a Clydesdale, he will beat him at anything except heavy carting; and a pair of nags on light land will do a third more work than any ordinary horse, their walk and habit are so much more active. Then nothing can compare with him for a light carriage, or as a trapper.

Will Breeding Hackneys Pay?

Now that we have glanced at some of the properties and examined several of the uses of a Hackney, the question now comes, would it pay our farmers to introduce the breeding of same? I may say that I know a little of the difficulties in establishing a new industry in a district. Still I have seen it done, and done successfully under far greater difficulties than could attend the introducing of the hackney breed by our farmers.

But the first thing to ascertain is whether there would be a market for horses if so produced, and would it be at a price to pay the breeders? In the first place, then, is there not a great lack of a pure-bred, reliable, light footed work-horse in our own markets? We have very few driving or riding horses properly so-called, but are content with breeding a few haphazardly between a thoroughbred and perhaps a light Clydesdale or half-bred mare, by which process we may get any sort of animal. There is no surety in breeding of this kind, still we continue to practise it. Few of these can be called very beautiful or symmetrical animals and a large proportion of them turn out slow, indifferent workers. This is to be expected from such heavily contrasted breeding. So in the first place our own market would be a capital outlet for such a horse as the Hackney, and I see no reason why we should not breed our own horses, and thereby not only largely benefit the farmer, but greatly improve the horse of our own country.

Then there are the American markets. These are already open for this class of horse, and are sure to keep steady and increase, for it is the short legged compact build of the Hackney that they require to counteract their rather high and lanky racers. Other colonies also import a large quantity both of stallions and mares, and there is now scarcely a country under the sun but imports more or less Hackney stallions for breeding purposes. The Master of Horse of the Italian Government, I am informed, has instructions at the present time to purchase 600 Hackney stallions—100 each year for six years in succession. And you must remember that these exported animals are sold at figures far above the ordinary farm stock rates. I believe from £200 to £500 are quite ordinary prices for good stallions, and I have known several run as high as £1,200. Now what is to prevent our Canadian farmers getting part of this business? Hackneys are as easily bred as Clydesdales and much cheaper. The market is as sure, in fact surer, I think, at least so far as high priced stallions are concerned, for whereas very high priced Clydesdales will only be sought by breeding fanciers here and there, a good Hackney has grown to be an almost indispensable luxury to men of means everywhere, and from these we can always demand a good price. For my part I see no reason why our farmers here should not make room for say two good Hackney mares each. They would find the mares exceedingly useful on the farm, and the progeny, as we have already observed would benefit by the mare being used.

If mated with proper sires the progeny of these two mares should come to realize from $250 to $300 per annum, and this should help to meet the rent day with much less labor than making it all by butter and cheese. Here I would advise that no farmer break in his own horses. A very great deal depends on how a Hackney or any other horse is broken in. This is a special business of its own, and requires a special training. So many horses go wrong broken in by the amateur that it never pays. Farmers should rather sell them with long tails, three or four years old, and never even "bitted."

HACKNEY REVIEW FOR 1892 AND 1893.

The Hackney, an established English breed of determined character, is at this moment coming to the front more than it has ever done before. It is becoming yearly more and more spread over the world, and perhaps these notes may interest breeders.

Under the term hackney is now included the Yorkshire roadster and Norfolk trotter, bred very much from the same stock, though the Yorkshire breeders have crossed more with thoroughbred blood than the other breeders in the eastern parts of England. Much care has been taken to preserve the breed in Yorkshire, Lincolnshire, Norfolk, Huntingdonshire, Cambridgeshire, especially in the Isle of Ely, also in Suffolk, and many parts of England, Scotland and Wales have found the horse with action, the Hackney, to cross well with their mares.

The object of the majority of breeders, and the only way in which a small owner or tenant farmer can get any benefit from horses, is to breed an animal which is saleable at an early age, whose breaking is not attended with much risk, as is the case in breaking a young hunter for sale, and which can be bred and reared at a moderate expense. To attain this I maintain the Hackney breed is well suited. Much discussion has taken place about the size of the hackney, many people holding the opinion that no Hackney is over 15 hands 2 inches. The Royal Agricultural Society of England also limited the Hackneys in their prize list to that height until their show held in Norwich, 1885, when, at the request of the Hackney Stud Book Society, a class of 15 hands and over was allowed and well filled.

The thoroughbred horse has increased in average height about three inches in 150 years. In the same way the hackney, which was no doubt formerly about 14 hands, and even less, has, by selection of breeding animals, by care and proper feeding of young stock, also increased in size, and this to the great advantage of breeders, especially of those who breed harness horses. A good little horse with action is worth money ; a good big one is worth a good deal more, and very large sums are always given for matched pairs. The Hackney stallion stands on short legs with excellent feet and joints, and is sounder, perhaps, all around, than any other known breed in England. At the first show of hackneys held in London, 1885, at the Agricultural Hall, over 20 stallions, varying in age from 4 years to 16, selected by the judges, were absolutely sound.

At several shows over 20 hackney yearlings have been exhibited, and many have changed hands, while foals have been sold from 60 guineas to 400 guineas each. The home trade for good Hackneys increases, and the stallions are gradually spreading to many parts of England where they were previously unknown.

The export trade is also lively. Many of our best mares have been purchased for the continent, and for years Italy, France and Austria have bought hackney stallions.

The Hackney horse is doing immense good on the small country mares, and begetting the best horses for cavalry and all army purposes in India Everyone who breeds animals is convinced that his method of doing so is best, and the craze now is to improve every breed by crossing. No doubt the first cross between polled cows and a shorthorn bull, or a long wool ram with short-woolled ewe, is a success, but I hold this to be entirely wrong in Hackney breeding. The cross between a thoroughbred sire and hackney mare may be a valuable animal, but it is oftener a nondescript weed ; the produce of a Hackney sire and thoroughbred mare is a better one, as they get the mare's stamina, and olten retain the action of the sire. A horse bred from Hackneys whose pedigrees can be traced for years, is certain to have action, and action always commands money.

The New York Show in Madison Square Garden, held in November of last year, may properly be named first in the order of public displays, seeing that it is an exhibition held under cover. Year by year this show attracts more attention, and fashionable folk come to the city for it, as for a great public function. The display in the Hackney classes was a good one, and increased the degree of favor in which the Hackney has come to be held, in the eastern States more particularly.

Early in July another good display of the breed was seen in the open air at Philadelphia. On that occasion there was a show of the results of using the hackney over American mares bred on thoroughbred and trotting lines. A noteworthy lot competed, demonstrating that in this way action, size and carriage style may be combined. To end the American national displays came the World's Fair Show. At this Chicago function the western States and Canada had their turn, and a brave show was the result. Mr. Beith, of Ontario, not only won the Hackney Horse Society's gold medal, with Jubilee Chief, 2122, by Pilot, 1323, but also held the reserve for Ottawa, 4440, by Lord Derwent II, 1034.

Mr. Crossley won prizes with his mares Lady Bird and Lady Cocking and his stallion Fireworks. Mr. Hastings also won a prize in the 2-year old class with Star of Mepal II., sire Star of Mepal, dam Queen of Denmark, Ontario virtually making a clean sweep in Hackneys.

Moved by Mr. Pepper, and carried, that a vote of thanks be tendered Mr. Hastings for his valuable paper.

Moved by Mr. Beith, seconded by Mr. Cochrane, that a vote of thanks be given to the gentlemen who so kindly donated the amounts given for prizes to be awarded for hackneys at the next Industrial Exhibition. Carried.

The following letter was read by the secretary, and he was requested to forward the same to Mrs. Hope :

Toronto, March 27, 1894.

Mrs. John Hope, Bow Park, Brantford :

Dear Madam,—At the annual meeting of the Hackney Horse Society, held a short time ago, the following vote of condolence was passed :

"The members of this Society, having learned with deep and heartfelt regret of the unexpected and lamented death of John Hope, Esq., who, for two years past, has been President of this Society, take this the earliest opportunity, to place on record our high appreciation of the important services he has rendered while President of this Board. We desire also to express our sense of the loss that this Society has sustained in the death of one whose ability and zeal in the discharge of his duties at all times, and whose able and wise suggestions and uniform courtsey to his fellow-members have endeared him to all with whom he came in contact. And especially do we miss him now at the first meeting of the year, over which, had he been spared, he would have presided. This Society therefore expresses its deep sympathy with Mrs. Hope and the family for the untimely removal of the husband and father."

Yours very truly,

H. WADE, Secretary.

Moved that the meeting be adjourned, to meet again at the call of the Secretary during the Industrial Exhibition.

SEMI-ANNUAL MEETING OF THE HACKNEY HORSE SOCIETY.

This meeting was held in Albion Hotel, Toronto, September 13th, 1894, at 8 p.m.

Members present: Robt. Davies, Toronto (President); Robt. Graham, Claremont; H. N. Crossley, Rosseau; John Holderness, Toronto; Jas. A. Cochrane, Hillhurst, Que.; Geo. H. Hastings, Toronto; Robt. Beith, M. P., Bowmanville; Thos. Irving, Winchester; A. E. Major, Whitevale, and H. Wade, Secretary.

The minutes of the last meeting were read by the Secretary and adopted.

Mr. Wade thought a few more inspectors should be appointed.

A short discussion then took place as to proper forms for mares and geldings sired by Hackney stallions.

Mr. WADE said: I have not had any applications, neither have I prepared any forms for this species of registration, but I think it would be advisable to do so at once, and perhaps issue a little circular and send around to the owners of the stallions to ask them to have these followed up.

Mr. DAVIES: I think instead of having it two years they should be limited to a year, and then have a penalty on after that.

The subject of electing more inspectors was then touched on, and it was moved by Mr. MAJOR, seconded by Mr. IRVING, that Mr. Geo. H. Hastings be appointed an inspector. Carried.

Moved by Mr. BEITH, seconded by Mr. COCHRANE, that Mr. Robt. Graham be appointed an inspector. Carried.

Moved by Mr. IRVING, seconded by Mr. HASTINGS, that Mr. Robt. Beith be appointed an inspector. Carried.

The inspection fee was then entered upon, and Mr. Wade explained to the members present that he had only charged the owners of horses the actual cost of a man going to inspect their horses. Mr. Davies thought it would be wise to make a standard fee of $15. After a short discussion it was moved by Mr. BEITH, seconded by Mr. GRAHAM, that the fee be $10 for inspection, the Association to bear the expense, and that all inspected mares must be sound. Carried.

Mr. COCHRANE thought it would be well to make a note of one or two of the Hackneys that took prizes at the Industrial. He said: Mr Graham's yearling stallion, sired by Firefly, took first prize in the carriage class and the silver medal as the best of any age. Also a yearling filly, owned by H. G. Boag, took first in the roadster class. Mr. Boag's filly was sired by Lavender. In the general purpose class half-bred Hackneys have won as foals this year and last year.

A suggestion was made that the Hackney Association try and get an expert judge for the next spring show.

Mr. WADE: I am going down to Springfield, Ill., and can ask Mr. R. C. Stericker to come if you are agreeable. If I thought it was the feeling of the meeting I would ask him to come up.

Mr. DAVIES : Is it your pleasure that Mr. Wade should call upon Mr. Stericker and see if he will act as judge at our next spring show? Carried.

Mr. COCHRANE : I would like to have some discussion as regards the single dog-cart class. I understand that the Industrial Exhibition give money in that class for hackneys, and I do not see why the hackney men should not have it. I think we should take that into consideration as to whether we cannot convert that into thoroughbred hackneys.

Mr. DAVIES : I think in the Industrial we will have to take up that matter and have a class for people such as Grand.

Mr. COCHRANE thought it would be a little more satisfactory to have the money than a silver medal with the name inscribed on it, and Mr. Davies then suggested that at the time of the Industrial Exhibition Association meeting they should come down and discuss the matters regarding medals, etc.

The meeting then adjourned.

CLYDESDALE HORSE ASSOCIATION.

DIRECTORS' MEETINGS.

The Directors met on January 24th, 1894, at 11 a.m.

Members present: R. Davies, R. Graham, R. Miller, R. Beith, Geo. Cockburn, W. D. Sorby and J. Davidson.

The president explained that this meeting was called to again, if possible, enter into a partnership with the Agriculture and Arts Association, for the purpose of holding another Spring Stallion Show.

After discussion about the depression in the Clydesdale interest, it was moved by John Davidson, seconded by R. Miller, that the Clydesdale Association give a grant of $250.00 to the Agriculture and Arts Association, and they to be asked to furnish the balance to complete the Prize List, the same as in 1893. Carried.

Moved by R. BEITH, seconded by R. GRAHAM, that the Agriculture and Arts Association be asked to hold the Spring Show this year on Wednesday and Thursday, the 28th and 29th of March next. Carried.

Moved by R. BEITH, seconded by R. GRAHAM, that this year we have two judges and a referee appointed for the Clydesdale class. Carried.

Moved by JOHN DAVIDSON, seconded by W. D SORBY, that John Duff, of Rockland, be a judge, also Arthur Johnston, of Greenwood, and that Robt. Beith be referee. Carried.

Moved by R. GRAHAM, seconded by R. BEITH, that Mr. Jas. Cowan, of the Street Railway, be appointed Superintendent of the Horse Ring for 1894. Carried.

The meeting then adjourned.

The Directors met at the Albion Hotel, Toronto, on February 7th, 1894, at 11 a.m.

Directors present: Arthur Johnston, Greenwood; R. Beith, M.P., Bowmanville; Robt. Miller, Brougham; Robt. Graham, Claremont; W. D. Sorby, Guelph; John Davidson, Ashburn; Geo. Cockburn, Baltimore, and H. Wade, Secretary.

ARTHUR JOHNSTON, Vice-President, occupied the chair.

The Secretary read the minutes of the last Directors' meeting, and they were confirmed. The Secretary then read his annual report for 1893 and the financial statement for the same year.

On motion of R. BEITH, seconded by R. MILLER, the report and financial statement were adopted.

An informal conversation then arose as to the advisability of appointing delegates to wait on the Dominion Minister of Agriculture at Ottawa, and the Ontario Government at Toronto, to urge on them the necessity of sending someone to Washington to urge the Secretary of Agriculture there to issue an order allowing the Customs authorities to accept certificates issued by the Canadian Clydesdale Stud Book as sufficient authority to pass horses at the frontier, instead of insisting on them being recorded in the American book.

The meeting then adjourned.

EIGHTH ANNUAL MEETING OF THE CLYDESDALE HORSE ASSOCIATION.

The eighth annual meeting was held at the Albion Hotel, Toronto, the 7th February, 1894, at 2 p.m.

The meeting was opened by Vice-President Arthur Johnston taking the chair.

There were present amongst others: Messrs. R. Beith, M P , Bowmanville; William Smith, M.P., Columbus; John Davidson, Ashburn; Geo. Cockburn, Baltimore; John Holderness, Toronto; David McCrae, Guelph; W. D. Sorby, Guelph; Alex. Cameron, Ashburn; H. O. Boag, Newmarket; O. Sorby. Guelph; Robert Miller, Brougham; Robert Graham, Claremont; Job White, Ashburn; John Vipond, Brooklin; John Bright, Myrtle; Jos. Cherry, jr., Nobleton; Peter Christie, Manchester; F. J. Crone, Toronto; Jas. I. Davidson, Balsam; John Duff, Rockwood; Robert Watson, jr., Varney; T. S. Graham, Bradford; Jas. Leask, Taunton; F. R Shore, White Oak; John Bell, Amber; Geo. Davidson, Cherrywood; Geo. Clayton, Peepabun; Geo. Gray, Clarke; J. Cherry, Toronto; A. E. Major, of Major Bros., Whitevale; John W. Cowie, Claremont; A. Dogherty, Ellesmere; Geo. Kerr, Yelverton; Geo W. Clements, St. George; Robt. Heron, Ashburn; A. Kennedy, Ayr; G. W. Green, Toronto

The CHAIRMAN: I am exceedingly sorry that our president is not able to be with us to-day. I do not intend to make any lengthy address. While times are dull we are not at all disheartened. I am hopeful that we will see better days, and see them before most people think we shall. I do not look with despondency on the horse trade.

THE PRESIDENT'S ADDRESS.

The Secretary read the President's address in the absence of the latter:

GENTLEMEN,—The past season has been an eventful one, and full of interest to members of the Clydesdale Horse Association. The most important event has been the holding of the World's Fair, and the selection for competition of our Canadian specimens against the world. That we were all anxious to succeed, both individually and for the benefit of the country at large, and zealous to do our best in that keen competition, goes without saying, and, although we did not receive that measure of success which we deserved, yet what disappointments we met with may be turned to good account, if we profit by the lessons that we have learned in observing points that we may have formerly overlooked. Without casting any reflection on the judging, I think all here will agree with me that Canada made a grand showing in this breed in size, style, and in every respect as regards the points that go to make a draught horse.

The gentlemen present who had the pleasure of seeing the large show of Clydesdales at Chicago (which was freely admitted by all to be the finest exhibit ever held in the world, both in numbers and quality), will agree with me when I state, that in my judgment, the American breeders put all their attention into producing an animal having very fine feet and pasterns (of which they made an excellent show), at the same time over-looking to a certain extent, the development of the body, which is an essential point in horses of this breed, and which are bred for draught and cart purposes only.

The demand for horses in general has been very slack, owing to the great financial depression existing all over the continent. However, we look for brighter times, and should not relax our efforts to improve our stock, so that when the demand comes, as come it must, we will have the supply.

The past exhibition will ultimately redound to our benefit as an advertisement of the greatest value, by showing what we could do, and in opening up future channels of business.

As Canada has too long been made the dumping ground for second and third class stock, I would strongly recommend that the breeders of this country, in future, use their very best judgment in importing only really first class stallions, in order to bring our stock up to the highest possible standard, and would point out the necessity of asking our Legislature to impose a tax on all horses for stud purposes, in order to root out the useless and very undesirable specimens now too often offered on our side-roads and by-ways at very low prices, thus demoralizing our country's reputation, which has hitherto held the premier position in America for Clydesdale horses.

It is false economy of the worst kind to breed to inferior animals, as it costs no more to raise a good horse than a bad one, and the question of fees should never stand in the way of securing the services of the very best horse obtainable, as the enhanced value of the progeny fully justifies the higher outlay.

I also recommend the continuance of publishing the Canadian Stud Book, and think that our breeders have suffered greatly by the arbitrary action of the American Association in forcing us to register our animals in their Stud Book, completely ignoring our Association. We trust, however, to be able to induce the Agricultural authorities at Washington to recognize our Stud Book, which is up to fully as high a standard as the American work.

I cannot conclude my address without referring to the sad death of our brother member, Mr. John Hope, who has been so prominently identified with the agricultural interests of this country.

The minutes of the last annual meeting were then read, and on motion of Mr. DAVID McCRAE, Guelph, seconded by Mr. A. E. MAJOR, Whitevale, they were approved.

The secretary then read his annual report. On motion of Mr. JOHN DAVIDSON, Ashburn, seconded by Mr. DAVID McCRAE, of Guelph, it was adopted.

SECRETARY'S ANNUAL REPORT, 1893.

GENTLEMEN,—I beg leave to present to you the eighth annual report of this Association, showing the business done during the last year.

Registrations.

We have recorded only 229 Clydesdales this year, against 448 in 1892, a decrease of 219, owing partly to the financial depression and very largely to the action of the American Government in not accepting our pedigrees at the Customs on crossing the frontier. Consequently, it has been decided by the Board of Directors not to print Volume VIII for another year.

A synopsis of the pedigrees recorded in 1893 shows that 134 were foaled in Ontario, 12 in Quebec and the Lower Provinces, 26 in Manitoba and the North-West, 19 in the United States, and 38 in Scotland. We find that from this lot 11 were sold to the North-West and to the United States.

It is gratifying to know that the new Wilson bill lately passed in the United States allows horses to cross over with only twenty per cent. *ad valorem* duty instead of $60 for each horse valued from $100 down, as was the case under the McKinley Bill. Unless the United States cancel the present objectionable ruling, by which they do not recognize our Canadian Clydesdale Book, we will still be at their mercy, but we hope they will meet our views if a proper delegation is sent to Washington to wait on the Secretary of Agriculture, and explain that our Stud Book is of as high a standard as their own, and that it is not courteous to debar the use of it. A goodly number of Clydesdales were exhibited at the World's Columbian Exhibition, and though full justice was not dealt out to us in the way of premiums the exhibit on the whole was a great credit to Canada. Our exhibit was not as well fitted up in the way of condition as some of the American horses, but our display showed the world that Canada is the best breeding ground for live stock to be found on this continent.

Spring Stallion Show.

This was again held in conjunction with the Spring Show of the Agriculture and Arts Association at the Toronto Drill Shed. It was more successful than ever; $290 and the Prince of Wales' Prize of $50 were contributed to us by that Association, also a gold medal by the Industrial Exhibition Association; $187 was collected in subscriptions from different hotels and merchants in the city; the balance required coming from our own funds.

The cash premiums paid out to the Spring Horse Show amounted to $540. We also contributed to the Hochelaga and Montreal Spring Show $25; to the Winnipeg Industrial, $25; Toronto Industrial, $25; and the Western Fair of London, $25, thus spreading the receipts of this Association over the Dominion of Canada.

There were fourteen entries of stallions in the aged class, nine in the three-year-old class and four entries in the young class, all superior animals.

In the purely Canadian class we had four entries in the aged class, five in the three-year-old class, and three in the colt class, all good animals.

The Sweepstakes this year was taken by D. & O. Sorby, of Guelph, with Grandeur (imp.) [1,724] (6,814), and the Canadian-bred Sweepstakes was again taken by Peter Kelly, of Brechin, with Pride of Dollar [962]. This is the second year in succession that he has won this prize.

At the last annual meeting the standard hitherto adopted by this Association was changed from not having an imported mare in the pedigree to all Clydesdales conceived and bred in America, so that colts from imported mares this year will show as Canadian breds, instead of competing with imported animals.

Treasurer's Report.

I have the pleasure also as Treasurer to present to you the annual statement of receipts and expenditures, as verified by the Auditors.

Receipts.			Expenditures.		
1893.			1893.		
January 1st.	To cash on hand	$ 82 13	December 31st.	By cash 135 Stud Books	$187 55
December 30th.	136 members at $3.00	408 00	‘	By salary Secretary and stenographer	56 00
March 16th.	Grant from Agriculture and Arts Association	290 00	"	Prizes Spring Show	540 00
March 22nd.	Subscriptions in city	187 00	"	Montreal Show	25 00
			"	Winnipeg Show	25 00
			"	London Show	25 00
			"	Toronto Show	25 00
			"	Cash on hand	83 58
		$967 13			$967 13

Audited and found correct.

List of Officers.

The following officers were then elected, the President and last year's Vice-presidents being re-appointed by acclamation, and Mr. J. M. McFarlane being unanimously added to the list for the North-West. In the case of the directors, the first five were elected on the first ballot, the sixth on the second ballot, and the seventh on the third ballot.

President: ROBT. DAVIES, Toronto.

Vice-President for Ontario: ARTHUR JOHNSTON, Greenwood.

Vice-President for Quebec: ROBERT NESS, Howich, Que.

Vice-President for Nova Scotia: WM. O'BRIEN, Windsor, N. S.

Vice-President for New Brunswick: A. S. Murray, Fredericton, N. B.

Vice-President for Prince Edward Island: Hon. JAMES CLOW, Murray Harbor, P.E.I.

Vice-President for Manitoba: J. E. SMITH, Brandon, Man.

Vice-Presidents for North-West Territories: JOHN A. TURNER, Calgary, N. W. T.; J. M. MCFARLANE, Saskatoon.

Directors: Robert Beith, M.P., Bowmanville; Robt. Graham, Claremont; Robt. Miller, Brougham; Peter Christie, Manchester; Alexander Cameron, Ashburn; John Davidson, Ashburn; Albert Major, Whitevale.

Delegate to Farmers' Institute: D. McCrae, Guelph.

Delegates to Toronto Industrial Exhibition: W. D. Sorby, P. Christie.

Delegate to Western Fair: E. W Charlton.

The CHAIRMAN: I would like to hear something said about sending a deputation to Ottawa and making representations to the new Minister of Agriculture at Washington as to having the restrictions taken off with regard to our Stud Book. Had we better send a deputation to Ottawa to interest the Minister of Agriculture there in presenting to the Minister of Agriculture at Washington the injustice to us?

Mr. MILLER, Brougham: We have not done very much in the matter; but there is certainly a very great deal to be done, and there is a great deal we have not done. There was no action taken by the committee that was appointed last year. I do not know whether I ought to apologize or not, but I think, perhaps, we ought to blame the Secretary. He never wrote me that the others were ready to act. We did not do anything last year.

Mr. MCCRAE: What are the prospects?

Mr. MILLER: In regard to consulting the directors of the American Clydesdale Association, I did talk to two or three of them, but I could never get them together. Unfortunately there has been no meeting held by the board that I could attend since that time, so that I have only talked to one or two of them. They appeared to listen to what I said, and to look upon it favorably, and say they would not object to such action being taken by the Treasury at Washington as would allow our horses to go into their country free of duty when we produced a certificate of registration on our book; but they did not give me any encouragement that they would take any action in the matter. They would not admit nor they would not deny that they had taken any action in the matter formally in the way of asking the Treasury Department to prohibit animals from entering into the United States free of duty when they were recorded in our book, so that I could not get much satisfaction out of them. The real fact of the matter is this, that when I was talking to them the two gentlemen, the president and Mr. Ogilvie (one of the directors), were so much interested in the exhibits of horses they were making that week at the show that I could not get them to consider the matter very seriously. However, I still think that we could have them bring their influence to bear to have that order rescinded at Washington; but whether it would be advisable to do as was suggested here this morning, to appoint a delegation to meet with the Government at Ottawa and get them to use their influence with the Government at Washington is for you to say. Mr. Wade says that he intends to ask the different Associations to appoint a representative to go on that delegation and ask that our Government do something in the matter.

Mr. MCCRAE: Do you think the president of their Association would not object to the change being made?

Mr. MILLER: From what he told me I do not think he would.

Mr. MCCRAE: Could we state to our Minister of Agriculture that such is the case, that the President of the Clydesdale Association there would not object?

Mr. MILLER: Yes; I think we would be justified in stating to the Minister of Agriculture that there would be no objections held out by the Clydesdale Association in the

United States to this change being made; I think so. But as I tell you I did not get it very definitely from them, and I could not get him to consider the matter seriously.

Mr. McCrae: I believe my name is on as a member of that delegation. I can say with Mr. Miller I had not any notice of any steps being taken, and I think it is unfortunate no steps were taken. If it is a matter of finance, and this Association had no money to pay the expenses, I would have tried to have borne part of it myself, for I think it is a matter that ought to be attended to, and if we can get it done it is certainly a very important matter for the horse trade of this Dominion. I think we ought to do something in this direction, and do it at once. I think the Government at present in the United States is more favorable to us than the Government before. But we have not got a one-sided case to plead. It is our own fault to a certain extent. We know very well there were other herd books started in this country that recorded animals that were anything but pure bred, and it was really the action of those that started up very strong articles in the American papers, and that led to this action being taken. I have also been led to believe that when it was put to them that our Clydesdale Association, had straight, right pedigrees, it was remarked that our present Secretary's name was attached to those that were not, and they could not distinguish between them. I think that referred to the draught horse record that you formerly had. Now, they had some ground for the action they took, and now that has been all done away with and a new Government in power I think we ought to be able to do something in the matter. I think we can go down with as straight a showing as possible. I think if the President alone went it would be sufficient. I do not think any large number should go down. The matter of allowing in the cattle ought to be brought up at the same time.

Mr. Watson: Do I understand the same difficulties exist with regard to imported horses owned in Canada as to getting them over into the United States as apply to Canadian horses?

Mr. McCrae: No; not if you have the record from the Old Country. They take the Old Country record and pass them; there is not the same difficulty.

Mr. Beith: They must have two recorded dams and two recorded sires, I think.

Secretary Wade: The idea I had was that a deputation be sent to Ottawa to ask the Minister of Agriculture there to send a deputation to Washington; he might pick out some Clydesdale man. But for own Association to father it would cost a great deal of money, and I think it would be listened to much better in Washington if it had the authority of the Minister of Agriculture to go down with. I think that this meeting should appoint a delegate—we have two members of Parliament in Ottawa all the time, and any one of those gentlemen would make a good delegate.

The Chairman: While it would be exceedingly good to have all the assistance we can get from the members of Parliament down there, yet I think men specially sent by ourselves would have more weight with Ministers than members of Parliament who haggle them all the time.

Moved by Mr. Davidson, seconded by Mr. McCrae, that President Davies and Vice-President Johnston be appointed delegates for that purpose.

Vice-President Johnston withdrew his name, stating he is unable to attend.

Mr. Smith, M.P.: It is a matter of very much importance to the Canadian farmers. Let me say one word in connection with a deputation. Mr. Johnston speaks of a deputation that he was appointed upon last year. I happened to go with the deputation to the Minister of Agriculture, and I must say I never saw a more unfortunate deputation in my life than that. Simply they were mixing up a number of questions together so that it was very difficult for the Minister of Agriculture to understand what really they were driving at. If you send a deputation take my advice upon this point—this is a Clydesdale Association. If the cattle men want to urge their claims let them do so, but let them do it separately from the Clydesdale Association. I think whilst Mr. Beith and I are willing to do anything we can while in Ottawa or out of Ottawa, a deputation will accomplish more if you send gentlemen of influence and weight in connection with these lines; but I must confess on this point that I think if we have a Minister of Agriculture in Canada it is his duty to push the claims presented by that deputation instead of sending a deputation to Washington. I believe if you send one to Washington they will come back as they went. Take the result of the election of last fall, I do not care whether it is a matter of paying duty; it need not be that. But they have still been able to protect themselves by compelling the Canadian people to register their horses in their stock book. I do not know as they are going to give up this advantage very readily. I do not look very hopefully upon it, but if we are alive to the interests of the horses in Canada as an Association here we should take every step possible to push our claims, and I do think a deputation should be sent to Ottawa to urge upon the Minister of Agriculture, for it is his duty to do it as representing the great agricultural interests of Canada, to take every step that is possible to bring about the wishes of the horsemen of Canada. You have to go there and say, "We want you to do so and so," and I believe good may come of it. It may not come in the next few months, but it will come. I think you had better send as a deputation gentlemen with as much influence as you can think of, and Mr. Beith and I will be only too pleased to assist in any way we can.

Mr. McCRAE: Do you think it would be the same in sending to Washington—that we should not mix up our interests there, cattle and horses.

Mr. SMITH: I would not mix them up. They were all pretty nearly for the same purpose there last winter, and a more miserable failure I never saw. And if you take my advice if a Clydesdale deputation should go to Ottawa, do not send a cattle deputation with it.

Mr. MILLER: If a deputation of cattlemen went there they would first ask perhaps that the quarantine restrictions against our cattle be removed, so that they would make conflicting interests in the wishes of the different deputations. If they were going there for the same reason that the horsemen would be going, simply to ask that they should recognize our stud book it might be well for them to go together, but when they go with such conflicting desires it would be advisable, as Mr. Smith suggests, not to go together. We have a plain case in every way; we are asking for nothing that should be refused by any friendly nation; we are only asking them to do by us the same as we do by them. We think our request is certainly entitled to be listened to when we make it.

The CHAIRMAN: There was a nomination of R. Davidson and myself as a deputation to Ottawa, but I decline positively. Will that be amended by another name?

Moved by Mr. MAJOR that Mr. Robert Miller be one of the deputation. Seconded by Mr. McCRAE. Carried.

Moved by Mr. DAVIDSON, seconded by Mr. BEITH, that Mr. McCrae be also placed on the deputation. Carried.

The CHAIRMAN: A new representative of Clydesdales is here, and I have much pleasure in introducing Mr. Graham to you who represents the estate of our lamented friend, Mr. William Innes, of Bradford.

Mr. GRAHAM was introduced and briefly responded.

Mr. R. MILLER, of Brougham: I have a motion to make, and this will bring up an old question that has been argued here nearly every year since we have formed an Association. There was a change made last year in regard to what constituted a Canadian Clydesdale horse. I would move that another change be made, and that a Clydesdale horse be something the same as it was before, or that the term Canadian bred Clydesdale horse be applied in the same way as it was before last year. My motion is this: Moved by R. MILLER, seconded by GEORGE DAVIDSON, that the term "Canadian bred Clydesdale" be applied to those eligible for registry in the Clydesdale Stud Book of Canada, but not tracing on the side of the dam to an imported mare.

Mr. McCRAE: That would require a notice, I think.

Mr. MILLER: That notice was given three years ago that the question would be brought up one year later.

The CHAIRMAN : I do not think there is any rule governing or requiring it should be done. I know it has been debated here on at least three occasions and twice without any previous notice having been given.

Mr. WADE : As far as my recollection is concerned Mr. McCrae moved a resolution one time, but it could not be carried out for that year, and he said he would give that notice of motion for next year, and I think that was the origin of it. I do not think there is any clause in the resolution debarring you from changing that at the annual meeting.

The CHAIRMAN : It is not a part of the constitution, and I do not think there is any rule that requires a notice of motion to be given ; I know of none. There is no written one at any rate.

Mr. MILLER : Have you decided whether my motion is in order.

Mr. McCRAE : If Mr. Miller would change the motion I think it would be better for the Association and for himself. He says a Canadian bred Clyde would be so and so. Now, he cannot do that without making a contradiction in terms. He may move a class be opened for animals that do not trace, which will be perfectly correct. Really what he wants is to have a class opened for competition for animals that do not trace to imported dams. The motion does not ask for that. It asks to say a Canadian bred is so and so, which it is not. You cannot say a Canadian bred animal that is dropped and foaled in Canada is not Canadian bred.

Mr. SORBY : I have several times advocated what has fallen through for the sake of economy, and I think it would be wise to do it yet even if our funds are low, to have the class Canadian bred defined as it now is, and a new class opened as defined by Mr. Miller perhaps, and have the three classes. That would be fair for everybody, fair for those that go to the expense of importing good mares, and for those who breed up Canadian bred mares until they can register. We will got far more entries at the shows and it will be a far more satisfactory way, and I think it will pay very soon.

Mr. MILLER : I am sure from the remarks that Mr. McCrae has made that he certainly does not understand my motion. I mean by this motion just exactly what is stated in it, that a Canadian bred Clydesdale horse, according to this meeting, be eligible for recording in our stud book. I do not allude in that motion in any way to having three classes for Clydesdales ; I do not believe it would be a good thing for us to have it. Any person that was at the World's Fair last year and saw the Clydesdale exhibit there must surely know that we in this country are able to breed just as good Clydesdales as there are in Scotland, and if we ask that it be so arranged that we have to put our horses bred from imported sires and dams in the class with Canadian bred horses that are crossed up from the bush, if you like to put it that way, it is certainly a humiliating admission on our part. We are admitting in that way that we cannot from the same dams and sires breed as good horses as they can in Scotland and in the United States. I say if we have a mare and a sire in this country that we can breed just as good a colt from them as any colt dropped in Scotland, and if people are importing mares and horses to this country that are not first-class then there is surely something to show them they are making a mistake, and that no man can bring anything here that would not be considered first-class in Scotland. I say it is not fair to the men who have been for years and years building up on their foundation stock, and have at last got something eligible for the stud book, and competition in our rings, that they should not have a fair show when they come into that competition, and they certainly need it. Any man with money—and now it does not take very much money, I believe—can go to Scotland and bring a mare, and if he brings back a stallion here or use the stallion already here, breed a colt from him, and he can beat anybody that has been working at this and using their skill and best judgment and money for years and years ; he can beat them the first time he comes into competition with them. This Association is made up to a very great extent of men who have crossed up from mares in this way, and it is not showing them proper courtesy, it is not giving them proper recognition when we in this way close them out and discourage them. If I have a colt that is dropped from an imported mare or from an imported stallion, I would be able to put it in a class where it has nothing to compete with but what you might call cross-bred horses. On the other hand, if I had a colt that was bred from stock that I had been improving myself year after year until I thought I had something pretty good, as good as could be crossed up from native stock and put it into the ring, and was billed after a colt from anywhere I have mentioned with an imported sire and dam, I would think that man by his money had beaten my skill and my energies in the past.

The CHAIRMAN: I know of no rule or reason written or otherwise to debar us from taking a vote on this question.

Mr. McCRAE: I can only say that I had to give notice of motion before. If you rule that way, I give in to the chair, and I may say in advocating this I was advocating just as much a regular definition of Canadian bred as I was anything else. An animal bred in Canada is Canadian bred, there is no doubt about that. I have not the slightest hesitation in saying so, and if Mr. Miller will only remember his English grammar he knows he is making a contradiction in terms in endeavoring to define anything else. He may make any rule he likes about that. I have been specially abused by the *Farmers' Advocate* in this matter. It has been thrown in my teeth that I was urging this from mercenary motives. Any gentleman that knows anything about me knows very well I am not very much on that, and I have to stand any amount of abuse because I was defending what I believe is right and a straight definition of a Canadian bred animal. The horses that are Canadian bred are the horses that are bred and foaled in Canada. If Mr. Miller wants to make a resolution, do not put upon our books or on the face of our catalogues a thing that is not true in terms.

Mr. MAJOR: Mr. McCrae has thought fit several times to attack me personally on this question. I was not at the meeting last year. I do not know why he should attack me on this point. I am ready to answer for all that the *Farmers' Advocate* advocates. If I had written the article myself I should certainly acknowledge the corn, but in this case he told me personally how he was going to jump on me; I suppose because I am delicate. (Laughter.) I think Mr. Miller in what he says is just right. It is money against skill, that is the amount of it.

The CHAIRMAN: If Mr. Miller would add "for exhibition purposes."

Mr. DOGHERTY: You cannot buy one of those horses as a Canadian bred horse which Mr. McCrae puts in. Those animals that are foaled in Canada you cannot buy them as a Canadian bred. They will tell you they are from imported. We want to buy these Canadians as Canadian breds and imported as imported.

Mr. MAJOR: I think what Mr. Miller and Mr. Dogherty have said is correct, because I know we have shipped horses to the west and the United States, and I know it would hurt the sale of those horses if you called them Canadian breds. If you have a colt from an imported mare, and they see it is from the imported mare, that animal is worth from a third to a half more.

Mr DAVIDSON: This question also arose when they gave prizes at the World's Exposition. The Clydesdale Association on the other side defined an American or Canadian Clydesdale was an animal born or foaled in the United States or Canada, and at the Industrial here it is the same, and I do not see how you can make it any different. But as far as I am personally concerned I do not care which way it goes, but I think an animal that is foaled in this country is Canadian bred just as I am Canadian bred.

The CHAIRMAN: I think that is merely an argument in the meaning of language. I think Mr. Miller is quite justified in putting it in that way. I think "for exhibition purposes" should be added.

Mr. MILLER: That is the meaning of the motion. It is only a technicality of words but of course that is not my intention to discuss. I just used the terms to be applied to this particular case. Mr. Miller then read his motion again.

Mr. SMITH: The objection I have to this question at the present time is that it is in a way sprung upon us. It is unfortunate that this should come up year after year, and be con tinued at the annual meeting. It does appear to me that the time has come when the Clydesdale men of Canada should have some rule we can stand by in this matter. If I remember rightly I was in the chair when that motion came up two years ago, and I do not think Mr. McCrae was compelled to give a notice of motion, but he very courteously did it. It appears to me it would be in the interests of the Clydesdale Association if Mr. Miller would carry out that rule. We have not the time, in the first place, to discuss it, and it appears to me it will be a hurried and catch vote.

Mr. McCrae: I have no objection if the Clydesdale Association want a rule in this way.

Mr. Miller: I will press my motion.

Mr. McCrae: I move as an amendment this be a notice of motion for next year. Seconded by Mr. Watson. Amendment lost.

Mr. Miller's motion upon being put to the meeting was carried.

Mr. McCrae: I give notice of motion that I will move against this at next meeting.

The meeting then adjourned.

DIRECTORS' MEETING, CLYDESDALE HORSE ASSOCIATION.

This meeting was held in drill shed, Thursday, March 29th, 1894.

Directors present: R. Davies, President, in the chair; Messrs. R. Miller, A. Johnston, John Davidson, Alex. Cameron, Peter Christie, R. Major, R. Ness, Howich, Q., and Wade, Secretary.

It was resolved that the sum of seventy-five dollars be set aside to be divided between the Hochelaga Spring Show at Montreal, the Winnipeg Industrial and the Toronto Industrial—twenty-five dollars to each.

The meeting then adjourned.

FOURTH AND FIFTH ANNUAL MEETINGS OF SHIRE HORSE ASSOCIATION.

The Association met in the Agricultural Hall, Toronto, on February 6th, 1894.

Members present: John Gardhouse, Highfield, President; George Garbutt, Thistleton; J. G. Wardlow, Downsview; Jas. W. Smith, Highfield; William Bell, Willowdale; J. Warrilow, Owen Sound; D Rountree, Carleton West; R. Mucness, Tullamore; F. Coleman, Hill's Green; G. W. Green, Toronto and H. Wade, Secretary.

The President occupied the chair.

The Secretary read the minutes of the last annual meeting, which were confirmed.

The Secretary then read the fourth and fifth annual report, which was adopted.

Fourth and Fifth Annual Report of the Secretary-Treasurer.

Gentlemen,—As there were not enough members present last year to form a quorum at the annual meeting, the officers for 1893 were again in duty bound to act for 1894.

The registrations for 1892 and 1893 have not been numerous. Only 23 stallions and 10 mares, or a total of 33, have been added to our Stud Book, making now a total of 352 for the 1st volume. It will be for you to decide whether we print it now or wait for more pedigrees. It will be a small volume, but it will be a commencement. If printed a second fee will have to be levied on the members.

For the two years only three more members have been added to our list. In 1892 only three Shire horses were shown at the Spring Stallion Show, but in 1893 we had nine on exhibition, and they were of very fair quality.

As Treasurer I beg leave to report as follows :

Receipts		Expenditure.	
1892. January 1st, cash on hand	$78 00	1892. Mar. 12, By cash, Prizes Spring Show..	$20 00
1893. Dec. 30th, three new members...	.. 9 00	1893. " " " "	20 00
		1893. Dec. 30th, balance	47 00
	$87 00		$87 00

(Signed) H. Wade,
Secretary-Treasurer.

Moved by Mr. Garbutt, seconded by Mr. Smith, that the action of the President and Secretary in giving Special Prizes to the Spring Horse Show for 1893 and 1894, to the amount of $20 for each year, be confirmed. Carried.

Election of Officers.

The election of officers resulted as follows :

President : John Gardhouse, jr., Highfield.

Vice-President for Ontario : George Garbutt, Thistleton.

Vice-President for Quebec : J. Y. Ormsby, Danville, Que.

Vice-President for Manitoba : Henry Nunn, Brandon, Man.

Vice-President for Prince Edward Island : George Tweedy, Charlottetown, P. E. I.

Vice-President for North-West Territories : C. J. L. Bushe, Grenfell, N. W. T.

Directors : James W. Smith, Highfield ; J. G. Wardlow, Downsview ; H. N. Crossley, Rosseau ; Robt. Macness, Tullamore ; John Donkin, Riverview ; Valentine Fitch, Oriel ; Francis Coleman, Hill's Green.

Auditors : G. De Warren Green, Toronto.

Delegate to Farmers' Institute : George Garbutt, Thistleton.

Delegate to Industrial Exhibition : John Gardhouse, jr., Highfield.

Delegate to London : J. H. Smith, Highfield.

Committee on Spring Show : John Gardhouse, jr , Highfield.

Judges : Richard Gibson, Delaware ; J. Y. Ormsby, Danville, Que.; David Rountree, Carleton West ; John Boag, Ravenshoe ; Wm. Bell, Willowdale ; Jas. Addison, Malton ; J. G. Wardlow, Downsview ; J. H. Smith, Highfield ; Geo. Garbutt, Thistleton ; John Gardhouse, Highfield ; J. Warrilow, Owen Sound.

DOMINION SHORTHORN BREEDERS' ASSOCIATION.

A preparatory meeting of this Association was held February 9th, 1891, at Secretary's office, the following members were present : Richard Gibson, President, Delaware : C. M. Simmons, Ivan ; J. I. Hobson, Mosboro' ; W. W. Ballantyne, Stratford ; W. G. Pettit, Freeman ; Jas. Tolton, Walkerton ; F. R. Shore, London ; Thos. Russell, Exeter ; Wm. Linton, Aurora ; W. J. Isaac, Markham ; W. J. Biggins, Clinton ; C. D. Wilson, Seaforth.

The President : I may state that the finance committee have examined the treasurer's report and endorsed it. It is now necessary for us, before presenting it to the executive committee, to read it over and see there is nothing in it they cannot endorse and have presented as their report. You will notice in the receipts this year that there are no bills payable. We got along this year without borrowing any money ; other years we had to borrow from $500 to $1,000 to enable us to publish the book.

Mr. Wade. There are two items I would like you to understand before going to the meeting, first, the falling off in 1893 of $49.80, compared with 1892, in registrations ;

second, the number of members are less compared with 1892, but this is owing to the hard times and depression all over the country.

A brief discussion took place, after which, it was moved by J. I. HOBSON, seconded by JAS. TOLTON, that this report be received and adopted. Carried.

Mr. GIBSON thought that the finance committee's expenses should be paid, as he did not see that it was business-like for any organization to ask a certain man to be out of pocket where others benefited by it. Mr. Hobson was of the same opinion.

Mr. WADE read the resolution that was passed at the annual meeting last year *re* Hon. John Dryden, and said: I might say that he was elected a life member, but as no executive meeting has taken place since, this is the first opportunity you have had to choose what the present should be.

Moved by WM. LINTON, seconded by JAS. TOLTON, that Mr. Gibson, Mr. Hobson and Mr. Wade be a committee to select a present, not exceeding $50 for the Hon. John Dryden. Carried.

Mr. GIBSON: I think you had better erase my name as a delegate to the Industrial Exhibition. I think Mr. Dryden would be a good man to put on, as he is not far away and it would not be so difficult for him to come and attend the board meeting.

Mr. WADE explained that Mr. Dryden had always attended this meeting and had taken an active part.

Mr. GIB.ON: I had a letter from Mr. Smith asking that the prizes usually offered for a cow and two of her off-spring should read two "off-spring, the produce of one cow," and the cow should not be shown. I also think it would be as well to inform the one appointed to the Industrial Exhibition of this fact so that it could be brought before the Board.

Mr. LINTON proposed that Mr. Wade be authorized to write the Industrial Exhibition to that effect.

EIGHTH ANNUAL MEETING OF THE DOMINION SHORTHORN BREEDERS' ASSOCIATION.

This meeting convened at Shaftesbury Hall, Toronto, commencing at 11 o'clock a.m., 9th February, 1894.

President GIBSON opened the meeting by taking the chair.

Among the members present were: Messrs. John I. Hobson, Mosboro'; W. G. Pettit, Freeman; W. Linton, Aurora; V. Fitch, Oriel; C. M. Simmons, Ivan; George Oliver, Galt; W. W. Ballantyne, Stratford; Dr. Frank J. Patten, St. George; Robert McEwen, Byron; W. J. Biggins, Clinton; Leonard Burnett, Greenbank; R. W. Morgan, Kernwood; J. C. Lawr, Avon; David Rae, Fergus; James Tolton, Walkerton: C. G. Davis, Freeman; John Mouncey, Fraser; John Isaac, Markham; Thomas Russell, Exeter; William Redmond, Peterboro'; D. Dyer, Columbus; Arthur Johnston, Greenwood; Frank R. Shore, White Oak; D. D. Wilson, Ildertor; J. Idington, Stratford; J. C. Snell, Edmonton; F. DeW. Green, Toronto; Capt. Robinson, Secretary Wade.

THE PRESIDENT'S ADDRESS.

The PRESIDENT in opening the meeting said: It has not been my custom heretofore to inflict a speech upon you, but I have preserved what I have had to say in moving the adoption of the report. To-day I intend to read a few thoughts that I have put on paper because the circumstances are a little different now from what they have ever been.

It affords me great pleasure to welcome you again to our annual meeting. I regret that more are not in attendance, for I am sure that it is a great benefit to all breeders to have their yearly conference where they can meet, not only to transact the necessary business, but also to spend a social time together, exchanging views and suggesting means of bettering the condition of trade and the improvement of the breed.

All successful business men, whatever their avocation may be, recognize the necessity of organization, and carry it out to the fullest extent. Now, why should not Shorthorn men do the same? "United, we stand; divided, we fall."

It would also be appreciated by your President and officers to have a big turnout yearly, showing them that you appreciated their efforts. It would also give them encouragement to renewed exertions, and, as there is wisdom in a multitude of counsellors, suggestions might be thrown out that would be of great benefit to the Association, and to yourselves personally.

From your Secretary's report you will learn that we are in a more flourishing condition than we have ever been, and our standing, financially, much improved; and when I say that this is the first year since I have been your President that I have been able to carry on the work of publishing the annual volume of the herdbook without borrowing from $500 to $1,000, you will readily see that we are on safe ground.

Such being the case, I can now, very satisfactorily to myself, retire from the office to which you have so generously elected me for the past three years. Before doing so, however, allow me to make a few statements of what has been accomplished during those years. In the first place, we have now a working executive committee, who are responsible for carrying out the wishes of the annual meeting, who see that the office work is being done properly, and to whom all complaints can be referred. We have also employed a competent auditor, who suggested a system of receipt blanks and corresponding stubs whereby a check can be kept upon the office receipts.

Again, we have effected a saving of nearly $200 per volume by asking for tenders for printing. There are some reforms yet to be carried out. I should like to see the office run at less expense, and I do think that we shall have to make a move in that direction. The fees for recording should pay the expense of recording, and leave the annual subscriptions to be used for the benefit of the breed, either to pay premiums at shows, or for other purposes that might suggest themselves. For instance, had we had a surplus to have used for the purpose, and commenced in time, I feel sure that we could have selected twenty-five Shorthorn cows in Ontario that could have beaten the Jerseys in the dairy test at Chicago. As it was, with as poor a lot as I ever saw together, we came so near doing so that the glory is ours. No breed has reaped as much benefit from that test as has the Shorthorn. Again, had we funds, we could afford, once in a few years, to carry "war into Africa," by sending a herd through the western circuit, advertising our breed Had we funds, we could encourage the development of milk in the breed by offering prizes at the big shows for dairy Shorthorns, a field almost unexplored, and one offering such great inducements. I have lately returned from the west, and I can say that in the State of Wisconsin the dairy interest is the great interest of the state. There the concern is intense as to the breed for the dairy, and the Chicago test has boomed Shorthorns more than any other sort. At the Madison Experimental Station the Shorthorn grade is the favorite, and the last of the Holsteins were lately fired for unprofitableness, only showing about two per cent. butter fat.

Again, I would suggest the propriety of appointing an arbitration committee, to whom all disputes could be submitted, instead of appealing to the law. Another innovation might, I think, be inaugurated, and that would be to have an appendix to each volume of the Herd Book, giving a list of prize winners at the principal shows each year, say, at Toronto, Montreal and Winnipeg, or such other places as you might think advisable. This would make the book more valuable as a work of reference. I know I attempted to fill out in the margin of my early volumes of the English Herd Book the Royal winners. It was a great job, and I gave it up; but had there been a list of Royal, Highland Society, and Royal Dublin winners, from the inception of the work until now, how much more interesting and valuable would it be!

I also ask this meeting to endorse the payment of the executive's necessary travelling expenses when on your business. On my own responsibility, I authorized your secretary to pay the committee's hotel and railway expenses, and I ask the members to endorse my actions in the matter. It is not right to expect men to leave their occupations to come to Toronto at their own expense, when every member is benefited thereby. It is not business, and no organization is worth belonging to that cannot afford to pay its officers their expenses for transacting the necessary work connected therewith. That this has been an oversight, I feel sure, and that it is only necessary to bring it to your attention to have the matter rectified. I would not speak so plainly, but I feel as though my successor should have a fair start.

It now becomes my pleasing duty to congratulate the Association upon the success of our herds at the Columbian. It was, indeed, a hard fight, and as the Christian has to fight against the world, the flesh, and the devil, so had our breeders against good cattle, prejudices, and bad, antiquated judgment. Fortunately, we had one man in the ring that understood his business, or we should have been badly left. He did all that could have been done under the circumstances: nevertheless, we were fairly entitled to some firsts that we did not get, and also some sweepstakes. It would be invidious to mention names, but I cannot resist the temptation to speak of one herd as an example of the singleness of purpose of our breeders, who do not handle Shorthorns to day, trotters to-morrow, or perhaps Shropshires, and by a quick change of base have a stud of Clydesdales, veering as it might be with the wind; and when I say that the herd which won the principal laurels at the Centennial was again to the fore at the Columbian, it proves that we have men amongst us who are not breeding for the day, or for money alone, but have that true love for the animal that a man, to be successful as a breeder, must have; and, though no prophet, I do venture to say that, should there be another international show twenty years hence, you will find my good friend Russell again in the thick of the fight, if alive.

Gentlemen, for three years you have honored me with one of the most coveted positions that our farmers can confer upon one another. Last year, during my absence, you so kindly continued to keep me in the same position, in earnest that you appreciated my efforts on behalf of the breed we all so much believe in. I have not had an opportunity before of thanking you, which I do now most sincerely. As I said before, I feel as though I could retire now gracefully, as the time has come for which many of us have been so earnestly, and at times almost tremblingly, looking forward to—that is, being out of debt, and self-sustaining. I now see in the future a brighter period and plainer sailing, and, as a veteran, I retire; but should my services ever be required, you may rely upon them.

I wish to thank one and all for the encouragement that I have received from you, and especially do I wish to thank the officers and employees for their kind considerations ever extended to me.

To your Secretary, ever courteous and obliging, I am especially indebted.

Ever since the British American Association was formed I have taken an active interest in the formation and success of what is now the Dominion Association. Few of you know the anxieties and cares of the small band who were at the initial meetings; but what was then almost a blind venture gathered strength with its manhood, until to-day it has grown into one of the largest and most useful live stock organizations on the continent. I do not claim that any of the success is due to my personal efforts; but I have the satisfaction of feeling that I have never prostituted my position for my own personal ends. The welfare and the strengthening of the breed has ever been held in view in all my work, well knowing that our favorite sort has only to be judiciously bred to ever remain the favorites on the continent, and that there is a special adaptability about them, a real, practical, dollars and cents value, that will always keep them to the front, as long as beef, milk, cheese, and butter are wanted.

The minutes of the last annual meeting were then read by Secretary Wade, and adopted by the meeting.

Moved by Mr. John I. Hobson, seconded by Mr. Fitch, that the President's address be referred to a committee composed of James Russell, William Linton, W. G. Pettit and D. D. Wilson, and that they report at the first meeting of the executive committee.

Mr. Hobson said: It would have been very much more satisfactory, if you pass this motion, if the report could have been presented to-day, but it seems to me that in your address you have brought forward a great many very important matters, and it is simply impossible for those gentlemen who are named on that committee to take part in the meeting this afternoon, and at the same time carefully consider and adjust those matters you have brought forward in your address. From my standpoint I view them as of very great importance, and I do not see any better time than to bring in the report than at the executive committee meeting, because if we leave it to the annual meeting much time will be lost. I cannot think of any better time than the first meeting of executive committee. Carried.

EIGHTH ANNUAL REPORT OF THE EXECUTIVE COMMITTEE.

The Secretary then read the following report:

TORONTO, February 9th, 1894.

The Executive Committee beg to present the eighth annual report of the affairs of this Association as furnished by the Secretary for the year ending 31st December, 1893.

Registrations.

In 1893 we were paid for 3,484 registrations, 3,540 certificates, and 587 changes of ownership. From these we have only rejected 14 registrations and 10 certificates, returning the fees, leaving 3,470 registrations, 3,530 certificates, and 587 transfers, against in 1892, 3,641 registrations, 3,454 certificates, and 491 transfers, and against in 1891, 3,135 registrations, 2,873 certificates, and 376 transfers, showing a few less than in 1892, but 335 more than in 1891.

Registration Fees.

Following up the change in registrations as a matter of course there is a corresponding change in registration fees; in 1890, we received $3,043.75; in 1891, $3,152.50; in 1892, $3,835.25; and in 1893, $3,787.45, a difference in favor of 1892 over 1891 of $682.75, and over 1890 of $791.50, but a falling off for 1893 of $49.80, which is not much considering the dulness in the Shorthorn business.

Herd Books.

Vol. I. There were sent out in 1887, 550 volumes; in 1888, 51 volumes; in 1889, 33 volumes; in 1890, 19 volumes; in 1891, 21 volumes; in 1892, 27 volumes; and in 1893, 18 volumes, to members and others, leaving on hand 281 volumes.

Vol. II. There were sent out in 1888, 451 volumes; in 1889, 39 volumes; in 1890, 26 volumes; in 1891, 16 volumes; in 1892, 20 volumes; and in 1893, 14 volumes, to members and others, leaving on hand 434 volumes.

Vol. III. There were sent out in 1888, 226 volumes; in 1889, 189 volumes; in 1890, 46 volumes; in 1891, 16 volumes; in 1892, 19 volumes; and in 1893, 10 volumes, to members and others, leaving on hand 491 volumes.

Vol. IV. There were sent out in 1889, 302 volumes; in 1890, 105 volumes; in 1891, 29 volumes; in 1892, 21 volumes; and in 1893, 5 volumes, to members and others, leaving on hand 535 volumes.

Vol. V. There were sent to members in 1890, 134 volumes; in 1891, 130 volumes; in 1892, 78 volumes; and in 1893, 39 volumes; leaving on hand 639 volumes; a great many of the regular members have not ordered this extra volume, costing only $2.

Vol. VI. There were sent out to members in 1891, 345 volumes; in 1892, 29 volumes; and in 1893, 32 volumes, leaving on hand 594 volumes.

Vol. VII. There were sent out to members in 1892, 318 volumes; and in 1893, 28 volumes, leaving on hand 654 volumes.

Vol. VIII. There were sent out to members in 1893, 304 volumes, leaving on hand 696 volumes

Vol. IX. will be completed in a short time, and will contain all the pedigrees recorded up to 1893, and as in Vol. VII. each pedigree can be traced in its entirety by referring to the pedigree of another animal in the same volume, making the volume complete in itself. In this volume the cows are printed under the name of each owner; this plan debars us from numbering the females at the time of recording. It will be sent to the regular subscribers for 1893.

Vol. X. has been closed, containing all the pedigrees recorded in 1893, and will be printed this year and sent to paying members for 1894.

Pedigrees on Record.

Volume 1 contains	3,304	Volume 7 contains	4,954
" 2 "	4,427	" 8 "	4,024
" 3 "	4,593	" 9 "	3,633
" 4 "	4,957	" 10 will contain	3,629
" 5 "	4,388		
" 6 "	5,904		43,813

As shown by the above table, we are now recording for the eleventh volume, which will contain animals recorded in 1894.

Number of Members from Inception to Date.

——	New.	Resigned and lapsed.	Not paid.	Paid.	Total paid.
B. A. 1882	164	....	....	164	164
" 1883	73	....	....	164	237
" 1884	42	....	....	173	215
" 1885	39	....	....	187	220
Dom. S. H. B. Asso'n. 1886	215	37	8	195	410
" " " 1887	80	54	81	357	437
" " " 1888	46	79	69	388	434
" " " 1889	36	37	91	398	434
" " " 1890	29	33	74	405	434
" " " 1891	32	67	59	365	397
" " " 1892	60	22	47	398	458
" " " 1893	49	38	72	349	398

This table shows that our paid up membership roll has decreased 60 in the last year in total numbers. There are still a large number (72) who are in arrears for 1893. Our income from members' fees for 1893 was $1,600, or $296 less than in 1892, owing to the financial depression.

Office Work.

This continues to be about the same, fully 3,267 letters and cards having been sent out, besides several thousand entry forms. A list of errors is made in each volume, which should be marked in red ink in the volume mentioned. We also hope breeders will furnish us with any catalogues of sales that may be made during the year.

Your Committee would call particular attention to the new rule requiring all calves born after the 1st of January, 1889, to be recorded before they are eighteen months old. A double fee will be charged after that date. Attention is also called to the clause in the Constitution which requires that "a member must pay up all his fees in arrear before he can resign."

World's Columbian Exhibition.

Ontario exhibited forty-six head of Shorthorns at the World's Columbian Exhibition. There was great competition, but we succeeded in getting in prizes $2,205 and three gold medals. Messrs. J. & W. Russell, Richmond Hill, out of eight prizes had seven first ones awarded them—more than any other exhibitor of Shorthorns at Chicago; this includes three first prize herds out of five offered by the Columbian Exhibition; they took $1,785 and two gold medals; W. B. Cockburn, of Aberfoyle, $165 and one gold medal; W. C. Edwards, M.P., Rockland, $150; R. & S. Nicholson, Sylvan, $105. One-half of this money was given by the American Shorthorn Association, a very meritorious action on their part. Mr. A. A. Armstrong, of Fergus, also took two seconds and one third prize on fat Shorthorn cattle amounting to $140. A great many other premiums, notably in aged bulls, were taken for animals bred in Canada but now owned in the United States.

Ontario also sent five milk cows for the dairy test; they were all good milkers. One, Waterloo Daisy, owned by F. Martindale, of York, was a wonderful milker, and if it had not been for losing her health for a time would have come out first as a Shorthorn dairy cow; she won $60 in prizes. Cow Lady Bright Second, owned by Herbert Wright, Guelph, a seventeen year old, also made a good standing. The other three were good average cows. All this stock had to stay ninety days in quarantine before reaching their homes. All the gentlemen who exhibited horned cattle deserve the best thanks of our Association, as they practically did without their cattle all the season, to do honor to our Dominion.

Herd Books.

Our herd book is still under the ban of the United States Customs authorities, and is not accepted in allowing animals to pass free of duty, which is, of course, a great detriment to us.

Since the last meeting we have received the XXXVIII. Vol. of the American Herd Book, and the XXXIX. Vol. of Coate's Herd Book as exchanges.

Extracts from By-laws.

Section 1.—Persons desirous of becoming members shall so notify the Secretary, pay the entrance fee, and agree, if elected, to conform to the rules of the Association, and not to withdraw without paying all fees due, and giving three months' notice of their intention of doing so.

Section 2.—Members shall pay an entrance fee of $4.00, and subsequently an annual subscription of $4.00, which annual subscription shall be due and payable on the first of January of each year.

New By-law.—That all calves dropped after January 1st, 1889, shall in future be registered within eighteen months of birth, and if not so registered, double fees shall be charged for their registration.

Section 15.—Fees. Charges for registration will be:

To members, registration and certificate, 75 cents for each animal.
To non-members, registration and certificate, $1.25 for each animal.
Over age, double fees; in all cases a certificate goes with registration.
Change of ownership, 25 cents; duplicate certificate, 25 cents.
Back volumes of Herd Books, $2.50 each.

HENRY WADE, Secretary.

FINANCIAL STATEMENT.

RECEIPTS.

1893.		$	cts.
Jan. 1.	Cash on hand	$1,334	52
Dec. 31.	349 yearly subscribers	1,396	00
"	49 new subscribers	204	00
"	Registration fees	3,787	45
"	Herd books sold	20	00
		$6,741	97

EXPENDITURE.

1893.		$	cts.
Dec. 31.	By Registration fees returned	$ 17	25
	Printing and stationery	220	90
	Postage	351	80
	Auditor	75	00
	Committee expenses	112	20
	Sundries, caligraph, furniture, etc	85	60
	Herd book, Vol. 8	1,717	29
Salaries.—			
	R. L. Denison	700	00
	H. J. L. Laws	600	00
	W. F. Stewart and S. Y. Baldwin	520	00
	H. Wade	500	00
	Messenger	100	00
	Cash	1,741	93
		$6,741	97

ASSETS AND LIABILITIES.

1893.			1893.		
Dec. 31.	To Cash	$1,741 93	Dec. 31.	By balance	$8,232 93
	Office furniture, books, etc.	100 00			
	Vol. I. D.H.B., 281 copies	421 50			
	" II. " 434 "	651 00			
	" III. " 491 "	736 50			
	" IV. " 538 "	807 50			
	" V. " 639 "	958 50			
	" VI. " 594 "	891 00			
	" VII. " 654 "	981 00			
	" VIII. " 696 "	1,044 00			
		$8,232 93			$8,232 93

I hereby certify that I have examined the books and accounts of the Dominion Shorthorn Breeders' Association for the year ending December 31st, 1893, and that the above statement is in accordance with the same.

G. A. SAVAGE, Chartered Accountant.

TORONTO, January 13th, 1894.

Mr. FITCH: I see something in this report I think we might save a little money on. Why do we get three or four times as many herd books as we sell? They are lying here and no good to anybody, and it is all paying out money.

Secretary WADE: They may be wanted fifty years from now.

President GIBSON: If there were only 200 books printed and 400 wanted that would make them very valuable to those who had them.

Mr. FITCH: If you had 500 printed instead of a thousand would not that be sufficient?

Secretary WADE: We have from the 1,000 volumes of Vol. I. only 281 remaining. Of course of the next volume there are more because to a new member we generally send them Vol. I. unless they ask for something else. You can get a thousand printed at a very much cheaper ratio than 500.

President GIBSON: We have about 400 members. They should each of them have a set of the herd books.

Secretary WADE: They have. Each one that has been a member has a book.

Moved by Mr. SIMMONS, seconded by Mr. PETTIT, that the report be adopted. Carried.

FINANCE COMMITTEE REPORT.

Mr. ARTHUR JOHNSTON: I was not aware that the finance committee would be asked to report to the meeting. We have prepared it for presentation to the executive committee, to whom we should report.

After some discussion, it was moved by Mr. WILSON, seconded by Mr. LEONARD BURNETT, that the finance committee report to the executive committee and that they digest the suggestions and incorporate them in their next annual report. Carried.

Moved by Mr. PETTIT, seconded by Mr. FITCH, that the meeting adjourn to 1.30 p.m. Carried.

At 1.30 p.m. the meeting resumed.

President GIBSON: I would say I had a letter from our auditor, Mr. Savage, in which he spoke very favorably of the way in which the business was now being conducted. I forgot to bring it with me. It was rather a nice letter. I have also one from Mr. Smith, of Exeter, in which he asks that we shall take some action about having a certain prize changed, given by the Industrial, where it reads "a cow and two of her produce" it shall now read, "the two the produce of one cow." The cow shall not be shown, the same as at the Columbian. This is a good suggestion. The only way I can see to carry that into effect is to instruct our delegate, whoever he may be, to the Industrial, that he shall try to induce them to change that, drop the cow.

Mr. J. RUSSELL: Allow me to say I do not approve of it. The Canadians were pretty sharply dealt with by the Americans at Chicago in that same game, and I believe any man that sells Shorthorn cattle should be able to produce the cow that produced them. I think it is the mainstay of the breeding. There is no use bringing out a scrub with two good cattle, and we see too much of that. I for one would object to that change being made.

President GIBSON: It simply means showing the two without showing the cow.

Dr. PATTEN: I would be in favor of making that change, for a cow might be dead and two good animals be shut out.

Mr. ARTHUR JOHNSTON: I would be in favor of that change. In ase a cow were nineteen or twenty years old and would not be fit to bring to a show?

Mr. HOBSON: I do not think after it has taken the shape it has that it ought to drop. Whoever may be the representative of this Association at the Industrial certainly would not know what to do as matters now stand. Leading stock men have taken it up and I do not think we can do anything else in the matter but settle it by a motion.

Mr. J. RUSSELL: As I was single handed in the statement, I withdraw.

Moved by Mr. SMITH, seconded by Mr. W. W. BALLANTYNE, that the communication be received and the suggestion therein contained be adopted. Carried.

ELECTION OF OFFICERS.

Moved by Mr. JOHN I. HOBSON, seconded by Mr. ARTHUR JOHNSTON, that the secretary be instructed to cast a ballot for Mr. Gibson as president for the coming year.

Mr. GIBSON: I came here fully determined to resign. I have been here long enough, three years is enough for any one man. While there are so many other men in connection with our Association I think these things should go round. I have given a good deal of time to it; I do not know as I have given as much as I ought to have done. It would be conferring a favor upon me, I assure you, to allow me to drop out. If you still think that I can be of service I will take it another year but with that understanding, it will be the last positively, but I do not really want it. Motion carried unanimously.

President GIBSON: I will not take up your time by speaking. All I can say is I must sincerely thank you and that I will exert my best efforts in your behalf the coming year, the same as I have done before.

Following is the list of officers and delegates elected:

President: Richard Gibson, Delaware.

Vice-Presidents: Arthur Johnston, Greenwood, Ontario; Hon. D. Ferguson. M.P.P., Charlottetown, P.E.I.; J. H. Ladner, Ladner's Landing, B.C.; D. Brims, Athelstane, Quebec; Josiah Wood, M.P., Sackville, N.B.; James Geddes, Calgary, Alba.: Prof. Geo. Lawson, Halifax, N.S.; John E. Smith, Brandon, Man.

Executive Committee: A. List.—Edward Jefis, Bond Head; Wm. W. Ballantyne, Stratford; Jas. Hunter, Alma; T. Russell, Exeter; John I. Hobson, Mosborough.

B. List—W. G. Biggins, Clinton; J. L. Cowan, Galt; James Tolton, Walkerton; Wm. Linton, Aurora; F. I. Patten, St. George.

C. List.—James Russell, Richmond Hill; John Isaac, Markham; W. G. Pettit, Freeman; D. D. Wilson, Seaforth; C. M. Simmons, Ivan.

Agriculture and Arts List: W. C. Edwards, M.P., Rockland; W. J. Westington, Plainsville; J. C. Snell, Edmonton; R. McEwen, Byron; William Dawson, Vittoria.

Delegates to Industrial Exhibition: Hon. John Dryden, Brooklin; John I. Hobson, Mosborough.

Delegate to Central Farmers' Institute: W. G. Pettit, Freeman.

Delegates to Western Fair : R. Gibson, Delaware ; C. M. Simmons, Ivan.

Secretary and Editor : Henry Wade, Toronto.

Moved by Mr. ARTHUR JOHNSTON, seconded by Mr. JOHN I. HOBSON, "That this Association of Shorthorn Breeders in annual meeting assembled, desire to express to Mr. James Russell the deep gratitude which they feel to that gentleman for the splendid manner in which he represented Canada with his superior herd of Shorthorns, which he must have done at considerable sacrifice and very great risk, and we wish to express the hope that the excellent herd may long be held together to do honor to Canada, as it has done more than once, viz., at Philadelphia and at Chicago.

Mr. JOHNSTON : Very many of us would have liked to have made a show at Chicago, but we could not make the sacrifice by sending the best animals and risking them in that manner. Mr. Russell has done it and reaped a great benefit. The risk was exceedingly great, and I have much pleasure in making this vote of thanks to Mr. Russell.

President GIBSON : No one can endorse the sentiments of this vote more than myself, for I was at Chicago and I saw the fight, and I know what Mr. Russell had to do to win. He not only had to win first prize, he had not only to have the best animal, but very much the best animal. He got no sympathy and he was entitled to all the prizes he got and entitled to some things he did not get.

The motion was carried unanimously.

Mr. RUSSELL : I am very thankful for the vote you have given me. With a herd of seventy-five cattle I showed in that ring three whites. Three whites in the three sweepstakes, in the three first prize herds, three whites in two and two in the other. The press of Canada from one end to the other, in fact the press of this continent, did not hesitate to give a full description, and I question much whether they had the right to do that to my injury or not. I won't take up your time by saying much, but I think it is the place of this Association to register the facts that I have stated, that in two years there has been only one white dropped on the place in between forty-five and fifty calves. There are only three on the place, and there were only four at the time of the Chicago Exposition, in seventy-five head. I think I have the right to ask from this Association to register in the next volume of the herd book the statements I have made, which can be substantiated by three affidavits if that is asked for. I thank you for the vote you have given me.

President GIBSON : I would ask, Mr. Russell, do you mean to say it has injured you by having it reported you had whites in the herd ?

Mr. RUSSELL : I do. I tell you the man who comes from Manitoba, comes from the United States, or comes from where he will, is under that impression and I am at the mercy of every breeder in this country. They say, it is no use of going to Russell to buy, he had got white cattle. I do not ask it as a favor, I ask it as even-handed justice. You talked of British fair play and loyalty last year ; I want it.

Mr. FITCH : I was at Mr. Russell's last night and I can clear that up very easily. I only saw three white animals, or two, out of seventy-five, and I think he bred all the animals he showed.

Mr. LINTON : I would like to know if this Association or the people of this country are down on white, as Mr. Russell represents. I never knew any man could breed Shorthorns unless he bred some white ones. I thought the white ones were invariably the best.

Mr. SIMMONS : So far as my knowledge goes I never heard of a breeder in our section of the country speak disparagingly of Mr Russell's herds on account of his having two or three white cattle in his herd. There is nothing of the kind in our section of the country talked of.

Mr. JOHNSTON : I do not think I ever saw a real good herd all round in my life unless I saw some whites, and I never heard any person speak about the white cattle in Mr. Russell's herd, I may say.

President GIBSON: There is a question I would like to submit to this meeting. The finance committee should have been appointed by the executive committee. The executive committee have adjourned. What are you going to do about their report?

Mr. SIMMONS: I move the motion passed before adjourning of Mr. Wilson's be re-considered. Mr. Wilson seconds the motion. I think it is perfectly proper, if the committee is going to meet, to receive the report from the finance committee. I have no objection to reconsidering the last part of it. Carried unanimously.

Moved by Mr. LINTON, that this Association endorse the action of the Provincial Board of Agriculture in asking the Ontario Government for a grant of money to enable them to carry out the sales of pure bred male animals ot all pure breeds which they contemplate.

Mr. SNELL: The Board of Agriculture has been solicited by breeders of stock to establish an annual sale of male animals at some central point or points, and that question was taken up at the last meeting of the board. A majority of the board were in favor of holding such annual sales, and concluded to ask the Government for a special grant or a grant in connection with our usual grant for that purpose, of a thousand dollars, and I suppose the object of Mr. Linton's motion is to strengthen the hands of the board in carrying out that scheme if it is thought to be a wise thing to do.

Secretary WADE: The details have not been formulated yet, but will be at the March meeting. I might say this was brought on more at the request of sheep men than of the cattlemen, although it was to be confined to any pure bred animals, and to be in the autumn the same as the tup sales in the Old Country. Of course cattle and anything of that sort will be brought at the same time, and the idea was, in a rough way, to give small prizes to breeders of animals in the back parts to encourage them. It will not be so much to breeders who are in the central part but there are a great many breeders living in outlying places where you cannot get pay for the services of your bull, and so on, and it was thought to bring those to a central point and establish a sort of annual sale.

Mr. RUSSELL: I stood alone on that board before when we had annual sales at the Black Horse Hotel by the Shorthorn Breeders' Association, and I could not get a seconder. They were brought there from Quebec and sold there at $16 a head registered pedigrees. They were sold in the Black Horse stables by the auctioneer and driven into the Toronto market and sold to the butcher at $10. They will bring all the rubbish and dump them down on Toronto to supply these men that buy them at $15 and $20 and $30 apiece. That will be the effect. I hold you cannot have an auction sale and get anything like value. The buyers stood over until it went over. I sold one for $75 to help the sale that I had refused $150 for.

Dr. PATTEN: I think I can endorse the action of Mr. Russell, and more then that, I do not believe in every Sheep Breeders' Association and the farmers and everyone trying to dip their hands into the treasury of the Government. I think possibly we may be asking too much and then condemning whatever Government may be in power for the lax expenditure of money, and from that consideration, and also that of making a common dumping ground to the detriment of men who have built up herds and spoiling their sales I do not believe in the proposed public sale.

President GIBSON: I have always taken the same ground as Mr. Russell.

Mr. F. SHORE: If it were horses, we cannot eat horses; but they can eat bulls, and I think it is better to sell those bulls to the butcher than offer them at public auction. We had an instance of it in Guelph lately, where bulls were selling at about $40 apiece, and they would have been worth more if they were fed for steers at the same age.

Mr. LINTON: I think there are two sides to this question. I look at it in a different light to these gentlemen; I look at it in this light, that this Ontario of ours is the acknowledged breeding ground of the whole North American continent. There are a great many Americans who would like to come here to buy stock if they knew just exactly where to get them. They perhaps know where Mr. Russell is and perhaps where Mr. Simmons is or Mr. Dryden, but they do not know probably where I live or some small breeder further back in the country, and if they go to Mr. Russell and cannot get just exactly what they want, they go to the President here and perhaps cannot get what they want, and they have to go back home without, and they have a terror of this country generally. I look at it in this way: A farmer back in the country buys two females we will say, rather good with good pedigrees. In four or five years he will have three or four or five bulls on his hands; his neighbors are a little jealous of him, and so he will not ever amount to anything, he has no reputation. But if he had good bright animals and have good pedigrees and he can bring them to Toronto and offer them to the Americans, and they correspond with the pedigree, he has an equal chance with the oldest breeder in the country; and if he can sell those cattle his neighbor will say, "Oh, Mr. So-and-so sold his cattle well, he sold them at a profit. I guess I will buy two or three cows and go into that business." The consequence is that man wants another bull, and will have to go to Mr. Russell or the president or one of these old breeders and get one, and there will be a great many men start up in this business, and it will be a means in a few years of annihilating the scrub. It is the only feasible method I see of annihilating the scrub. The Americans will take a great deal of the surplus stock we have to offer and the breeders of this country will want ten times as many as they have now. Ever since I can recollect some forty or forty-five years, I have been reading the scrub must go, but the scrub bull will come forth next May, and he will bellow just as loud on every side road and concession of this country as he ever did. He holds the fort as strongly as he did forty-five years ago, and I do not know but a little more so. (Cries of "No, no.")

The motion was lost.

Mr. LINTON moved, seconded by Mr. FITCH, that the secretary be instructed to address a letter of condolence to the widow and family of the late John Hope, expressing the sympathy felt for them in their great affliction, also setting forth the great esteem in which that gentleman was held by the members of this Association Carried.

Moved by Mr. F. R. SHORE, seconded by Mr. C. M. SIMMONS, that hereafter the executive committee meet the day previous to the annual meeting to receive the report of the finance committee and transact the executive business. Carried.

Moved by Mr. ARTHUR JOHNSTON, seconded by Mr. C. M. SIMMONS, that a grant of at least $25 be donated to the Provincial Fat Stock Show, to be awarded to pure bred Shorthorn steers, together with any other amount that club may see fit to appropriate for the same purpose. Carried.

PRESENTATION TO HON. JOHN DRYDEN.

Much interest was manifested in the presentation of a handsome clock to Hon. John Dryden.

Mr. HOBSON, addressing the recipient said: I may say, Mr. Dryden, that I have been asked by the representatives of the Dominion Shorthorn Association to convey to you the feeling of gratitude which the breeders and those interested in Shorthorns in this Dominion feel for the services which you have rendered to that interest. I might say that we purpose presenting you with an address, which will be done at a later day. In the meantime we will do no more than convey to you the feeling of gratitude and thanks of the breeders of Ontario for the services which you have rendered, particularly so at a time in the early days of the Association, when you are aware that there were great difficulties to contend with. You carried us through a period of great difficulty. Perhaps I may say we passed that period successfully largely owing to the individual efforts which you put forth yourself. We are well aware you have sacrificed a great deal of time, that you have spent a good deal of money and we feel it is only right and proper we should make you some tangible mark of our appreciation and for that reason we present you now with this clock. (Presenting the handsome timepiece.)

HON. J. DRYDEN : Mr. Hobson and gentlemen,—You have certainly taken me entirely by surprise. I got a telephone message a little while ago that I was requested to come to the meeting of the Shorthorn Association, and the most natural thought that came into my mind was you were in some difficulty and wanted to be helped out—some financial trouble or something of this kind—but I find in getting here I am the man who is in difficulty. I am sure I cannot find words at this short notice to express properly my gratitude for the kind words which have been uttered by Mr. Hobson in your behalf. I have during my time occupied a good many public positions, and I would like to say that I have never accepted these positions for their own sake merely, nor for the honor which they brought to me, but for the privilege and opportunities given to accomplish some good in the particular interests which have been represented. I very well remember some years ago when this Association was originated. I was taken quite as much by surprise as I am this afternoon on learning that I was selected as the one who would take the headship of your Association. We were then laboring, as Mr. Hobson has said, under a good many difficulties ; there were a good many diversified interests which had to be brought together ; and it was with some considerable difficulty that we undertook the task which was then before us. I have often said since that, now knowing what I had to do, that if I were asked to undertake it again I should shrink from it. I do not think the credit should be given to myself for having engineered through all these difficulties which presented themselves, but perhaps I did my share, and I suppose Mr. Hobson is right that a great deal of time must have been necessarily spent by those who undertook the work. I was quite willing to do it if by that means we could advance the common interest which we all had at heart. I am glad to say that either through my influence or through your own exertions, we have passed that stage, and you are now working together in the utmost harmony, and I believe the work of your Association is being carried on with the greatest of satisfaction. These financial difficulties we had then have been overcome, and I presume from this time on you will be able to carry on your work with a great deal more ease than we could do in those earlier days. There are a good many breeds of cattle in the world, and there are some of them that you and I are not interested in, yet we recognize that they are valuable. I am not one of those who are inclined to run down a class of cattle I do not happen to breed myself. At the same time I think that those who breed Holsteins or any of those other breeds of cattle will not deny me the privilege of saying that the Shorthorns have produced more wealth in the nations of the world than any of those other breeds of cattle. (Hear, hear.) They have been spread over the entire civilized world ; their influence is felt everywhere. You will find the impress of the Shorthorns on the herds of this continent no matter where you go. They are recognized as a beef breed—nobody denies that they have extra qualities in that direction. Everybody interested in other breeds of cattle have been willing to acknowledge that, but those people have not always been willing to acknowledge that the Shorthorns had other good qualities as well. I am glad to say that through the work which has been performed at the great Chicago Exposition we have proved now to the world we do not take a back seat at any rate in reference to the milking qualities of the Shorthorn. (Hear, hear.) And in England I believe this is recognized more than it has been here. The fact is our American people are fond of new things, and so we have had people in this country after these years presenting for the first time new breeds to the world, and have been interested in them for the reason that sometimes perhaps they think there is a little more money in going into something everybody does not possess. At the same time, while that is so, our Shorthorns to-day stand better in the eyes of the world in America than they have ever stood at any other period in the world's history. (Applause.) I believe the mass of the people, some of whom had their opinion diverted, who turned away and thought they were likely to find something better in these other breeds, are coming back again now, and are willing to recognize that after all this is the established breed which cannot be excelled for useful qualities and general purpose qualities among all the breeds that are now known anywhere. I am always proud to be coupled with the breeders of so excellent a race of cattle, and no matter where I am, so long as I live, I shall have some degree of love and affection for a good Shorthorn. I never enjoy myself better than when I am permitted, sometimes in my own herd and sometimes in that of another, to be able to look over the good qualities which we so frequently find in this good race of cattle. I shall always, I apprehend, continue my interest in it, and I am glad to remember the associations which have been formed. We form fast friendships where we are breeding the same sort of cattle. Some of us have formed friendships in this Association which will never die out. I remember very well when I first was brought into intimate connection and relationship with my friend, the President. We perhaps were brought more closely together in the years when the Agricultural Commission was being conducted. Both of us were members of that Commission, and I remember very well how then we were linked together in and enjoying the satisfaction which came to us because of the notice which was brought in that Commission to the Shorthorn cattle. I need not say anything more. Allow me again to express my gratitude for your kind words. I am sure anything I have done is more than repaid by the fact that I shall realize whatever I have done in connection with this Association has been recognized by those who are interested now. I do not know that I have done anything more than was my duty to do. Any man accepting a position of the kind ought to throw himself heartily into the work, and I tried to do that as I have tried to do in every position I have held; but when a man does his duty it is not always perhaps that his efforts are recognized. It is with very great gratification, therefore, that I realize this afternoon you have thoroughly recognized any part that I have played in carrying on the work of this Association. (Applause.) I meant to have made another remark in connection with what has been done at the World's Fair. I do not know whether you have done anything about it, but there were four or five of the members of this Association who volunteered to hand over the use of their cows during the whole season to go to Chicago to win glory for the rest of us. Now, some of these men could ill-afford to lose what they have lost in the transaction. I do not know very well how the Government can take it in hand, but it occurred to me it would be a good thing for this Association to recognize it, and if you have money on hand it would be a good thing to give them a little for what they have lost. I know some of them gave up their best cow; they did not suppose it would stay away very long, but it stayed away the whole season. I should be very glad for my own part to do something in that direction.

Mr. TOLTON: In connection with this matter of recouping I would move that it be left in the hands of the Executive Committee, for this reason, that they would have more time to look into the matter, and they would be able to recognize this in a substantial way, in the way of giving something to these parties, and the amount, if there are funds available for that purpose. They could take this matter into better consideration than we could this afternoon. Seconded by Mr. HOBSON and carried.

Moved by Mr C. M. SIMMONS, seconded by Mr. W. W. BALLANTYNE, that in the opinion of this Association there should be a section added to the Provincial Fat Stock Show to the Shorthorn class for heifers under three years old that were eligible at the Toronto Industrial the previous fall, eligible for showing as a two-year old.

President GIBSON: That money was given by the Sheep and Swine Breeders themselves. It is not given by the Fat Stock Show.

Mr. SIMMONS: I know it is; at the same time they have opened the door in that way. I think it would add to the show, and if we get behind we will have to go to the Government as the Sheep Breeders and Swine Breeders do. My object in moving this resolution is, if you have a heifer that has just passed the three-year old period a few days she is eligible to show, and if you have one that is not she is not eligible to show; and I notice, too, that in swine and sheep they are all eligible to show females, and I think that bars out a great many of our good stock from being exhibited at the show. I know, to come to the strict sense of what the Fact Stock Show would be, that no swine or sheep ought to be kept for breeding purposes that were exhibited; but when they would deviate from that to the other breeds of stock, why not the Shorthorn as well? It would add very much to the exhibition if that were changed, if they were not quite three years old that they could be exhibited at the show.

Mr. ARTHUR JOHNSTON: Although the Sheep and Swine Breeders may do as they please, I think it is a mistake to show any Shorthorn that is not designed for slaughter in the season then present. I am opposed to the motion, unless they are designed for immediate consumption.

Mr. SIMMONS: I think that in the case of many of us who are raising these heifers, if we could get down to Guelph and get a prize we would be willing to sell them at six and seven cents a pound. I have no objection to having that added to it as far as I am concerned.

Mr. JOHNSTON: I am positively opposed to showing at fat stock shows any animal that is not designed for immediate slaughter, or at least within a reasonable time.

Mr. SIMMONS: With the consent of my seconder, I am willing to add Mr. Johnston's suggestion, that, whoever the exhibitor may be, it will be for slaughtering purposes. The motion was then carried.

Moved by Dr. PATTEN, that while Mr. James Russell exhibited in the three first prize herds in Chicago three white animals, yet at the same time he had in a herd of seventy-five only three white, and that there was only one dropped on the farm in the last two years, it is open to create a wrong impression that the herd is strong in whites, and that this be published in the forthcoming herd book.

Mr. HOBSON: I think it is quite uncalled for. I cannot think for a moment Mr. Russell's herd has been injuriously affected in the way in which you would lead us to suppose by that motion. I think we are going a little out of the way to do it.

President GIBSON: I am opposed to putting that in the herd book. The herd book is not intended for anything of the kind, and moreover it will not reach the parties for whom it is intended; the Americans will never see our herd book. We have better means of reaching the Americans, if it is for that purpose, than we have by putting that in our book. That is the wrong place for it, and I should object to the herd book being used for anything of the kind.

Dr. PATTEN: I do not think Mr. Russell is hurt but in order to make everything right I do this.

Mr. SNELL: I think this meeting has shown Mr. Russell that they appreciate the work he did in Chicago in representing our country by the unanimous vote that was passed a while ago complimentary to himself and his cattle.

The motion was lost.

Moved by Mr. ARTHUR JOHNSTON that on the registration of these three white animals, at the bottom of the pedigree be added the note that they won first place in the sweepstakes at the Chicago Columbian Exposition.

Mr. RUSSELL: I would ask you to withdraw it.

Mr. LINTON: I would go further than that. Every animal from Canada that won a prize there should have a note to that effect, no matter to whom it belongs.

Mr. SIMMONS: I second that.

The motion was lost.

Mr. JOHN IDINGTON, of Stratford, here read the following paper:

SOME OF THE MANY THINGS I DON'T KNOW ABOUT SHORTHORNS.

In this province there are estimated to be about two million cattle. Of these the pure bred Jerseys, Guernseys, Holsteins, Herefords, Polled Angus, Galloways, and Shorthorns form but a small fraction.

It is not assuming too much, I fancy, to say that pure Shorthorns outnumber all these other pure bred cattle put together, and it may be claimed without offence to the breeders of these others, that the grade Shorthorn in a still larger proportion outnumbers the grades derived from all these others.

Can this ascendancy be long maintained? Can it be made still more marked in the process now going on of pushing the nondescript scrub out of the field? What hinders and what will help such a result may well come under consideration on this occasion.

In making these suggestions it occurred to me to throw into a short paper some of the many things I don't know about Shorthorns.

The special purpose cow has very earnest advocates. If we had special purpose farms they might have, if not the best of the argument, at least enough on their side to command attention. But what are the facts? The census returns of 1881 show for this province 782,243 milch cows and 896,661 other cattle. Assuming the same proportions to exist now there are nearly nine hundred thousand milch cows in stock. What classes of people own them? To what use are they put? Are they not chiefly in the hands of the ordinary farmer to supply his family with milk and butter, and a surplus of butter for the market.

And are not the other cattle as distinguished from the milch cows chiefly in the same hands and consisting of stock raised from these cows?

The breeding of Shorthorns under such surrounding conditions should be viewed in the light of what is needed to render these cattle profitable.

Is it for that purpose desirable to breed the sort of Shorthorn that will make beef alone regardless of milk and its products? How many farmers make this raising and feeding of cattle for beef the main part of their business? It is not the case that in Ontario the steer, is as it were, mainly a by-product of the farm? Is this not also true of the old cow the non-breeding heifer or the unprofitable cow? What sort of bull will tend to increase the value of these by-products whilst preserving the main object of getting that fairly good milker that these farmers want?

As we have no large ranches solely devoted to pasturage or corn with which to feed cattle, can our farmers afford to use the Shorthorn bulls that will obliterate the milking qualities of their herds? Have we not been working in this direction? How long can we persist in doing so under the conditions surrounding us without a reaction setting in against our favorite breed? And if that reaction does set in will there not be a serious danger not only of the Shorthorn ascendancy being lost, but also of some other breed commanding the field as Shorthorns do now?

We are told on the highest authority that "the longhorn cattle in their native home were suddenly swept away as if by some murderous pestilence by the introduction of Shorthorns." Is a recurrence of such a phenomenon at the expense of Shorthorns an impossibility here?

How many Shorthorn herds, for example, exist now in the State of New York? What are there now with what were there thirty years ago or less? Are they either absolutely or relatively, either in numbers or in quality, what from their position then might have been confidently predicted for them now? Have they not been largely supplanted by the Jerseys, the Guernseys, the Ayrshires and the Holsteins? And have not the Shorthorns moved west? Will ours move west? Is it desirable that they should, and be supplanted by breeds such as so largely supplanted their kindred in New York State? Is that desirable, either for the welfare of this province or the Shorthorn breeders? If not, can we, and are we doing that which will avert it? How can we avert it? The ordinary farmer buying a bull often knows little of pedigree and less of the past history of Shorthorns. He follows where the majority of the members of this Association lead. He wants milk and butter and beef to use or carry to a profitable market. He has been buying and is yet buying our stock on the faith of their producing this combination. He knows what he wants, even if he does not understand the pedigree or what was made or will come from the animal offered. Are we giving him the animal that will produce it?

Again, the dairy farmers who supply our cheese factories and creameries raise but few calves and are only concerned in the beef question to the extent of selling to advantage their cows that from age or accident have become unprofitable. The dairy farmers form but a fraction of the great aggregate mass of cattle owners.

They are, however, of the best and most prosperous farmers in this country. Their requirements and opinions must have a powerful influence in fixing the judgment and forming the fashion that will prevail not only amongst and for themselves but also all other farmers in regard to the best breed of cattle to use. Can we meet their requirements? The Columbian Fair grounds and many an English dairy farm answer in a way to encourage us to hope that we can.

If we cannot monopolize their custom as absolutely as we can that of the ordinary farmer already referred to, can we not at least share it? Can we not make of them friends if not partizans of our Shorthorns. Are we not coming dangerously near to courting their hostility? My questions may seem to suggest guesses at truth that resemble danger signals. If there be no need to hoist the signal, sail on as fearless as of yore. But if there be rocks ahead, and close at hand at that, how came they there, and how can they be removed or passed? The high prices of beef cattle not so long ago, for a considerable time, encouraged the breeding of Shorthorns of a purely beef type. The open market of the great corn belt and the greater ranch ground of the more remote west seemed to furnish an unlimited market for bulls of the same type. That market is practically closed by quarantine regulations, and even if these be in a few years removed, the market from other causes will not be what it has been. The price of beef cattle has fallen to such an extent that it would be unwise to attempt to force, if we could, farming into the special purpose of raising beef alone.

Meantime we have become so much accustomed to admire the fine appearance of a plump, blocky, nicely rounded smooth animal that we keep on in much the same old line.

Can we afford thus to please the eye and gratify only the butcher and his customer? Some lay stress on the value of early maturity. Is early maturity a quality that belongs only to this sort of cattle? Even if it is, has the pursuit of early maturity been pure gain? Has the idea of early maturity not been pushed to an unreasonable extent and in a wrong direction and by erroneous methods? How much have we lost in its pursuit? Has it or the manner of its attainment not tended to beef at the expense of milk in the quality of the animal? Even from a beef point of view alone, have we got nothing but gain in getting early maturity? Can the (for it) very early maturity of any breed be brought about without lessening the size of the animal? Has not early maturity in Shorthorns in some cases been attained at the expense of size? Or has reduction in size contributed to early maturity? Or has size been maintained whilst early maturity has been obtained?

Can the breeder profitably do more in this aim at early maturity than eliminate from the structure of his animal such, or reduce so much, of the parts thereof as may under changed conditions of existence be desirable? The reduction of bone or dropping of horn, for example, may save expense of food, but when the process has gone as far as is consistent with maintenance of size, is there any gain in further reduction?

Is there an early maturity that may be gained by increased food and care, and another that may be gained by reduction of size without increased food? How is the latter got? Does early mating produce it when persisted in for several generations?

Is it when thus got a desirable result? Have we Shorthorns that in whole or in part thus acquired it? When systematic breeding for several generations has reduced a larger to a smaller type, and thereby fixed a smaller type that has in the process acquired some advantageous qualities, can we expect to use successfully this smaller type by crossing it upon the original larger one? Assume each in all its parts equally well proportioned, can a cross either way be prudently adopted?

Is it not extremely probable that in the process there will be a disturbance of the symmetry or proportions of some of the various parts that will tend to destruction? Is this mistake not being made even in the home of Shorthorns now?

What bearing has the length of life upon the quality of early maturity, or the quality of early maturity upon the length of life?

Will an animal that carries in it from birth life forces destined to bear it along for a period beyond the average life of its kind, attain maturity as soon as one in which the original life forces are such that it will naturally die short of such average life?

Does the breeder not feel more at ease with animals whose pedigrees show in their immediate ancestors an unbroken series of long livers than with a herd whose history is the reverse of this?

Returning from this digression of what may be set down as very heterodox challenges of received opinions, and coming again to our milk supply, what other causes than beef type by early maturity or otherwise have operated to deprive our herds of their milking quality? What has the enormously high prices of certain tribes not done to injure their race? Granting that these high prices attracted the enterprise and valuable support of many most desirable friends, and advertised and pushed forward the extended use of the breed in a way nothing else could possibly have done, has there not followed great evil?

Let us assume that originally a man of genius moulded a cow that surpassed all others in the qualities we now need, are these qualities there now? If there, are they so in as marked a degree as when the master's hand was withdrawn? If not, what contributed to their loss? We often hear and read of in-breeding having wrought, if not disaster, at least loss of many valuable qualities in certain tribes of what were once held to be our best Shorthorns. Is this the sole cause or even the main cause that truly accounts for what is alleged against it? Is it not rather the least fruitful source of the evils complained of? Is it not rather the truth that the very excellence of the cattle thus produced laid the foundation of their deterioration if not of their destruction? This may seem paradoxial, but yet is it not true?

The surpassing good qualities brought enormous prices. The enormous prices tempted the owners to use everything that would live and breed. There was no selection, and without selection, either natural or by the directing mind, nothing that lives or grows can maintain a high standard of excellence. The marvellous profits that seemed within the grasp of anyone owning and breeding these cattle, tempted men of means, sometimes ignorant of everything that the breeder must know to succeed, to invest and embark in that for which they had neither the genius, the instinct, nor the training to bring to a successful issue.

The necessity of pleasing the eye tempted the abandonment of milking or even of nursing calves with such precious matrons as these. Could the original good milking qualities be thus maintained or propagated? We are told to remedy the mistakes of the past by selecting the good animal and then see if the pedigree be right. Both may be found unobjectionable and yet may lead astray. Is it not a fact that Shorthorns have diverged in type to such an extent that the crossing of the extremes of type, even with most excellent individuals, might be the grossest blunder? What then is to be done to meet the present emergencies? Will our masters please rise and tell us?

I believe that he who wishes to learn must begin to doubt and to question. No progress is made by unquestioning faith. Hence I have been bold enough, with very limited experience and none of the qualifications of an expert to submit in this paper much that challenges the work of my superiors in Shorthorn breeding.

If I provoke the discussion by these superiors, in many points regarding which, in common with many others I dwell in ignorance, I shall be amply satisfied.

If I venture to suggest anything, I would say something like this: The common Canadian cow is often an excellent milker. Encourage the selection and use of the best of such for breeding and the destruction of all else. Encourage her owner to select the milking families of Shorthorns in adopting the Shorthorn cross. Encourage our farmers to believe that Shorthorns are not made for beef alone. Encourage our Shorthorn cows to milk. Encourage our Shorthorn breeders to select from the sort of Shorthorns they have bulls of the like, but of the best milking families of kindred type of cattle. Encourage the Shorthorn importer to keep his eye on his business so open to see the animal that will revive and restore the milking qualities of our herds.

And I would say to the young man beginning to breed Shorthorns, that if he devote his life energies to it there is, if he has the instinct and genius for the business, as rich a field here in Ontario to mould out of broken pieces as harmonious a whole as he can wish, and there awaits fame and fortune in the evening of his days.

Mr. Johnston: I move the thanks of this Association be tendered to Mr. Idington for his paper; I may say it is the best paper I have ever heard read before the Association. Time forbids the proper discussion it deserves, and that it be referred to a future meeting. Seconded by Mr. Linton and carried.

Moved by Mr. Arthur Johnston, that a delegation be appointed by this Association to wait on the Hon. Mr. Angers, Minister of Agriculture for the Dominion of Canada, and on the Hon. Mr. Dryden, Minister of Agriculture for Ontario, asking them to send a delegation to Washington to confer with the Hon. Mr. Morton, Secretary of Agriculture there, for the purpose of explaining the matter of the discontinuance of accepting our certificates by the Customs authorities at the lines, as it is unjust and unneighborly not to do so. Carried.

Mr. Simmons: I think the names of the delegation should be left to our president.

President Gibson: I would name Mr. Arthur Johnston, Mr. John I. Hobson and our Secretary, Mr. Henry Wade.

THE PART THAT THE SHORTHORN IS TO PLAY IN THE FUTURE.

The following paper was read by Mr. J. C. Snell, of Edmonton:

There is a strong probability, amounting almost to an absolute certainty, that while grass grows and water runs, the human race will require, as an important factor in its sustenance, an ever increasing supply of beef. With the constantly increasing population of the world and the growth of new towns and cities, especially in this western world, we may reasonably expect an increasing demand for this product of the farm. And the increasing number of persons in comfortable circumstances will no doubt exact a better quality of beef as they do a better quality of butter, and will be willing to pay a higher price for what suits their taste. The wise farmer, and stock raiser and feeder, will see that it is to his advantage to cater to the taste of his customers and to meet the demands of his market.

The British market has in the past few years been a grand opening for disposing of the well-fed beef of this country and has been the means of bringing large sums of money into our country. That market is still open and free to our beef if not to our live cattle, and probably will continue to be open and free, and while we have not now and may not again have the advantage over other countries in that market in being permitted to take our cattle inland alive for the markets of inland cities and towns, we will still have the British market on equal terms with other countries, and if proper care and attention is given by our breeders and feeders to producing the very best quality of beef, and having it placed upon the market in the best possible condition, there is no doubt we shall obtain the highest prices going. The whole difference between profit and loss in a critical market generally lies in the difference in quality and condition. The best will always bring a fair price and find ready buyers even in a depressed market, while animals of inferior quality and condition are passed by and neglected even in a buoyant market, and have to go begging for buyers in a depressed market.

There is a fair prospect that large slaughtering and packing establishments will in the near future be opened in leading cities in Canada, which will dispose of large numbers of cattle, and these will arrange for shipping our beef dressed, and placing it on the English market in that shape, at much less expense for freights than can possibly be done with live animals, and with much less risk of loss and in more uniform condition. The offal can in these establishments be utilized to advantage in many ways, giving employment to large numbers of men who will in turn become consumers of the products of the farm and customers of the farmer. The outlook, therefore, is by no means discouraging, but rather hopeful, and with an enterprising and industrious people such as we have, with the skill of our breeders and feeders which has been proven in many ways, we may feel confident of being able to hold our own in competition with the world in its markets.

The breeders of this country are directly responsible for the class of cattle the country produces, and they should exercise care and discretion in keeping up the standard of the product as far as their influence extends. It is a matter for regret that the average farmer is so slow to acknowledge the superiority of pure bred stock for feeding purposes, or rather so slow to avail himself of its use in improving the stock he has, but we have to deal with things as we find them, and the only way to secure an improved state of affairs is by a gradual system of education—line upon line, precept upon precept. Experience and observation join to confirm the opinion that the greatest factor in bringing about the class of beef cattle rendering the greatest profit to the farmers of this country for that purpose has been and will continue to be the Shorthorns. Other breeds may come and go, but the Shorthorn seems destined to go on forever. They furnish the standard of excellence for others to aim to attain, but for this country no other seems to fill the bill so satisfactorily, either as a beefing animal or as a general purpose cow.

The cow which can yield a fair supply of milk for the dairy, worth say $40 a year for butter or cheese, and at the same time raise a calf on her skimmed milk which at two and a half years old, with proper care is fit for an export steer or heifer, worth from $65 to $75, and is herself worth nearly that amount for beef, when from any cause she ceases to breed, is a safe sort of animal for the general farmer to have and to keep. And the farmers of this country, so far as they have sought to make any improvement in their cattle, have shown their preference for the Shorthorn for the purpose of grading up their stock. An examination of the host of cattle placed upon the market will satisfy any man who knows anything about breeds that not more than one out of every 10,000 shows evidences of any other improving blood than that of the Shorthorn. It is this blood which has made our cattle fit for the export trade, and which has thus brought millions of money into our country. Other breeds have not been untried. In some sections of the country first-class herds of Herefords, Galloways and Polled Angus have existed for twenty-five to forty years. But go into these same sections of the country, go into the markets of these neighborhoods, and how many animals do you find giving evidence of the blood of those breeds? Very few indeed. If they possessed the influence to improve the common cattle of the country, which the Shorthorn does, surely the farmers in so long a course of years would by some means have discovered the fact, and have availed themselves of their use. But go into a neighborhood where a Shorthorn bull has been kept for a few years, and you will see evidences of his influence in the fields and by the roadside in the improved form and condition of the grade cattle of that section.

The question of the adaptation of a herd of cattle to any country or section of a country is one which the majority of the people interested generally settle for themselves as the result of experience and observation, and this test seems to have definitely settled the question in the minds of the great majority of the people of this country that the Shorthorn is here to stay; and I for one, am cheerfully willing to accord to this noble class of cattle the highest meed of praise, and to their breeders the honor of being placed high upon the honor-list of benefactors of their country.

Let this Association as such, and individual breeders as well, be true to themselves and to the best interests of the breed, by seeking to perpetuate in their cattle the great cardinal virtues of robust constitution, feeding qualities and uniformity of a good type, for early maturity, the production of the largest quantity of the best quality in the smallest superficies and at the least cost,—an animal that will give the best return for the food consumed and of a quality that meets the demand of the market—and success may be safely considered assured.

To this end the pruning knife should be more freely used than it ever has been. All inferior animals should be weeded out. The mistake has too often been made of spoiling a tolerable steer to make an inferior bull, because there seemed to be more immediate profit. Such a course is sure to prove unprofitable in the long run, as it injures the reputation of the breeder to send out an inferior animal from his herd, and a bad one will be pretty sure to perpetuate his meanness in his offspring. Uncle Abe Renick used to say he always felt his knife turn in his pocket when he saw a mean bull, and it were well if this spirit actuated all our breeders. And not only mean bulls, but mean heifers and cows should be culled out and sent to slaughter, if we would attain the best results in breeding.

Many of the crazes which in the past have done so much to injure the breed have had their day and are dead and well buried, such as that for fancy pedigrees without an animal to match, and the craze for a fixed color no matter how deficient in the more substantial virtues. Let us hope we shall not again be led to run after other fads which may be started, but breed for usefulness first, and let pedigree be secondary, but not a matter of indifference. When a good beast and a good pedigree are combined the best results may be reasonably looked for and will be generally attained.

Mr. Snell's paper was received with much applause. A vote of thanks, which was carried unanimously, was tendered him on motion of Mr. Linton, seconded by Mr. Russell.

THE OUTLOOK FOR THE SHORTHORN TRADE

was the subject of a paper given by Mr. James Tolton, of Walkerton.

For me to write any observations on any matter pertaining to the breeding, the proper attention to or how to handle Shorthorns, is to do so with extreme diffidence, as I well know that there are many members of this Association and others who are connected with the trade, who are much better informed on the question than I am. Do we not ask ourselves before entering into any of the different lines of our farm pursuits, "Is it going to pay?" or, in other words, will there be sufficient returns for the labor expended and the outlay of capital? In these days it is not uncommon to hear the remark "It does not pay to breed Shorthorns," and if the reasons are asked why it does not, the answer is that such low prices for the animals prevail. It is true that the prices that were obtained at the memorable New York Mills sale are past, perhaps never to return, and perhaps for the general good of the country it is just as well that it is so, for young stock bulls for the improvement of our common stock would be beyond the reach of the general farmer. But if lower prices are now obtainable then were formerly, is this not true of all our other farm products? Wheat, at one time was the staple crop of Ontario, but what with the deteroriation of the soil and the low prices for the grain, this cereal has ceased to be a profitable crop to the farmer. It is also true that for these causes, with those of the opening up of new and fertile wheat fields in other countries and the increased facilities of transportation, it is not at all likely that the prices that were once obtainable for this cereal will return again. From the causes already stated it necessitates the Ontario farmer turning his attention to other lines of products than grain. It is an accepted fact that the climate and soil of Canada are admirably suited to the production of beef and dairy products of the finest quality. It is also an accomplished fact that these products have established for themselves a reputation in the British market. We must naturally conclude that, if we desire to produce such products as are profitable and to not only restore but keep up the fertility of our farms, we must turn our attention more generally to the production of beef and dairy products for the British markets. Now it may very naturally be asked which of the existing breeds will come the nearest to meet these requirements? Unhesitatingly I would answer the Shorthorn. In the first place is not the Shorthorn sire the cross that is almost universally used by the farmers of Ontario, as witnessed by the stall-fed cattle that are exported from this country, and the dairy cows that are kept on our farms? In the second place, without any detraction of the other improved breeds, does any other breed so nearly fill the requirements of the general purpose cow as the Shorthorn? In the third place there is no other breed that stamp their characteristics in a more marked degree than the Shorthern sires. With these conditions existing now, so in the future will the Shorthorn be the favorite with the general farmer.

If these arguments are well-founded, then we may safely assume that the present demand for Shorthorn sires will continue, and the probabilities are that it will increase as the farmers more generally become alive to the fact that it is materially to their advantage to use such sires. At present it is a notorious fact that there are many scrub sires still in use. Now I think I have shewn that the prospects for the future are somewhat brighter than they have been for some time in the past for good useful animals.

Perhaps it would not be out of place here to sound a note of warning to the breeders of Shorthorns. In the first place, I would say breed such animals as will meet the demand both for the dairy and beef purposes. It is my opinion that many breeders have been paying too much attention to specialities, that is breeding for one of these purposes alone, without due regard to both these objects. In the second place do not keep or sell inferior animals for breeding purposes, but send them to their proper destination, the shambles. In the third place, I would say do not lay too much stress on pedigree. In the past many inferior animals have been sold and bought not for any individual merits of their own, but only because they had the blood in a straight line of some noted family, which I think is mainly the cause of the reproach we so commonly hear, "that there is nothing in pedigree," and that there are many better animals without a pedigree than some that have. I would not for a moment undervalue pedigree, but would insist on having the qualities sought for along with it; and having them, a good pedigree adds to the value of the animal in a marked degree.

In about all the things we wear, and in many of our actions, we are controlled more or less by fashion; and although it may seem a little ridiculous, we have had and still have fashions in breeding Shorthorns, which have not been in the interests of improving the breed. We have fashion in pedigree with the evil results which have already been adverted to. We also have fashion in colors and many an inferior red has been purchased in preference to a much superior white.

In my neighborhood nearly all the persons you meet who want to purchase a sire want him to be red in color, and why this notion? Is it not a notorious fact that many of the animals which have stood at the head of their classes in the show rings both in the breeding and fat classes have been whites? I would not like to say that the breeders are altogether responsible for these notions, but they should use their efforts to disperse these prejudices from the public mind.

It was moved and seconded, a vote of thanks be tendered to Mr. Tolton for his paper. Carried.

President Gibson: I think we have not enough time in one day to transact all our business. We should have two days I think.

At 4 p.m. the meeting adjourned.

REPORT EXTRACTED FROM THE "BREEDERS' GAZETTE" SHOWING THE PRODUCTS OF FIVE CANADIAN COWS.

In the first test three Canadian cows were entered, viz: Marchioness 6th, owned by J. Ballantyne & Son, of Stratford, and she stood the thirtieth on the list of all breeds and seventh on the list for Shorthorns. She gave $540\frac{5}{100}$ lb. of milk in that time, making $48\frac{64}{100}$ lb. of cheese and $480\frac{7}{100}$ lb. of whey. She gained 49 pounds in weight, giving a net profit of $3 93 against $6.97, the highest for the first prize Jersey cow, Ida Marigold. She had been milking from the 31st of March.

The second Canadian cow in this test was Waterloo Daisy, owned by F. Martindale, of York. She gave more milk than any cow in the test, viz.: $714\frac{4}{100}$ lb., making $64\frac{15}{100}$ lb. of cheese and $635\frac{4}{100}$ lb. of whey; unfortunately, she lost 21 pound in weight by being over-fed one day, which brought down her net profit to $3.12; otherwise, she would have been the highest ranked Shorthorn cow in the test, as Nora, the fifth cow in the test, a Shorthorn, only gave $663\frac{1}{100}$ lb. of milk and 590 lb. of whey, but her net profit was $6.27. Waterloo Daisy ranked fifty-second in the lot and eleventh in the Shorthorn lot. She had calved on April 21st.

The third Canadian cow was Royal Duchess, owned by J. F. Davis, of Glanworth. She had calved on the 31st of March, 1893, so had been milking five months. She gave $466\frac{7}{100}$ lb. milk, making $39\frac{73}{100}$ lb. of cheese, and $415\frac{1}{100}$ lb. of whey. Her net profit was $2.29; she stood seventieth on the general list and twenty-second on the Shorthorn list.

These cows were charged with the feed they ate and credited their yield of cheese, the value of the whey, and the gain in the weight; so a great deal depended upon judicious feeding. This test establishes the fact that the Shorthorn, although only ranking by this test as the third best cow for cheese-making, is the best combination cow for the banner. It takes a good cow to make 60 lb. of cheese and 56 lb. of beef in fifteen days. The entire Shorthorn herd averaged $32\frac{5}{100}$ lb. of milk with 3.6 average per cent. of butter-fat, and made an average daily gain in weight of a fraction less than two pounds each, establishing the fact, that the dual capacity of dairy performance and beef-making exists in the Shorthorn breed, and had these cows been fed under better circumstances the gain would have been still higher, as it was notorious to us who saw the feed, especially the hay that they had to eat that it was not fit for barnyard cows, let alone dairy ones under a test. The weather was also extremely hot all during this test.

The second test was for butter, and lasted ninety days, from May 31st to August 29th, and the results, as far as Canadian cows are concerned, are as follows:

Waterloo Daisy, owned by F. Martindale of York, ranked twenty-seventh in all classes, and third in the Shorthorn list, taking $40 for that prize. She gave 3,601$\frac{3}{100}$ lb. of milk against 3,634 lb. given by the first prize Jersey, Brown Bessie, thus producing 151 lb. of butter with $61.62 or a total profit, after charging up feed, of $48 69.

Fair Maid of Hullett, owned by Wm. Grainger, of Londesboro', come second in the Canadian contingent, and gave 3,520$\frac{7}{100}$ lb. of milk, making 150$\frac{31}{100}$ lb. of butter, worth $60.81, total profit of cow $44.88. She ranked seventh as a Shorthorn and thirty-fifth in the entire lot.

Lady Bright, a seventeen year old cow, owned by Herbert Wright of Guelph, ranked third amongst the Canadians, twelfth amongst the Shorthorns, and forty-eighth in the whole lot. She gave 2,908$\frac{9}{100}$ lb. of milk, making 114$\frac{26}{100}$ lb of butter selling for $46.80 and giving a net profit of $37.61 in this short line.

Marchioness 6th ranked fourth in this test, owned by T. Ballantyne, of Stratford, fourteenth amongst the Shorthorns and fifty-third in the full class. She gave 2,614.09 lb. of milk, 118.51 lb. of butter, giving a profit of $34.71 for the ninety days.

Royal Duchess, owned by J. F. Davis, of Glanworth, ranked fifth amongst the Canadians, twentieth amongst the Shorthorns and sixty-eighth in the full class. She gave 2,202 lb of milk, 99.55 lb. of butter, giving a profit of $29.66.

The third or thirty day butter test commenced August 29th and lasted to September 27, inclusive; only three Canadian cows participated in this test, viz.:

Waterloo Daisy, owned by F. Martindale of York. She was the fourth best Shorthorn and won $20, was twenty-eighth in the test of all breeds. She gave 1,169 lb. of milk, making 47.77 lb. of butter. Net profit for that time, after charging up feed, $14 61.

Lady Bright, owned by H. Wright, of Guelph, ranked sixth as a Shorthorn and twenty-second in this test, just one point too low for a money prize. She gave 1,048.08 lb. of milk, making 44.61 lb. of butter. Profit $13.50.

Maid of Hullett 2nd, ranked thirteenth as a Shorthorn, and forty-third in the whole class. She gave 884.08 lb. of milk, making 39.04 lb. of butter and clearing $11.58 profit.

I copy from the able report of the Hon. H. H. Hinds, of Stanton, Mich., what he says about the old cow, Lady Bright 2nd, who calved June 11th, eleven days after the second test commenced. "She was much the oldest cow in either of the herds; she was past sixteen years, and her teeth were so impaired that mastication was difficult. My ambition with this cow was to show dairymen and other interested parties that the Shorthorn was not only a profitable dairy beast during her prime, but that she stayed in it long enough for the dairyman to raise up a son to manage the farm. My expectations with regard to this old cow were fully realized; she squared away under the disagreeable surroundings of this contest, and gave from June 11th to August 28th inclusive, seventy-five days 2,908.9 lb. of milk, which showed 95.13 lb. of butter fat, equivalent to substantially 119 lb., 80 per cent. butter, or over one and one-half pounds a day, and added to her weight 33 lb." Again he says: "That to prove that the Shorthorn herd as a whole, good, bad, indifferent, in the ninety day test, with all the unfavorable surroundings, showed themselves dairy cattle, I will simply state that the twenty-four cows actually gave 66,263 lb. of milk, showing 3,410 lb of fat, equivalent to 3,012½ lb. 80 per cent. butter, which amounts to an average of over 1.4 lb. per day for each cow participating, after deducting the fifteen days lost before Lady Bright started in the test." In addition to the very creditable butter average just stated, the twenty-four cows during the ninety days added 2,826 lb. of cow meat to the weight of their carcases as a final account for their feed.

THE SEVENTH ANNUAL MEETING OF THE DOMINION AYRSHIRE BREEDERS' ASSOCIATION.

This meeting was held in Shaftesbury Hall, Toronto, on the 8th day of February A.D. 1894, at 2 o'clock p m.

President M. BALLANTYNE occupied the chair, and opened the meeting.

Among the members present were: Messrs. James McCormick, Rockton; John Crosby, Campbellford; W. W. Ballantyne, Stratford; Alfred Kain, Byron; Alfred Brown, Bethel; H. E. Eyre, Harlem: Thomas Guy, Oshawa; William Stewart, jr., Menie; Frank Shore, London; David Morton, Hamilton; A. W. Smith, Simcoe; A. D. Harkness, Irena; J. C. Lawr, Avon; W. N. Howell, Goderich; W. H. Phillips, Frankford; A. P. McDougall, Melbourne.

President BALLANTYNE: Gentlemen, I have a few remarks here noted down to give you. In referring to the work of importation, I would say that unless we get aid from the Government to help to bear the expense it will be beyond, as it were, the reach of many of the ordinary farmers. We know that there are thousands of dollars spent bringing people from the Old Country who are but little profit to the country indeed, bringing a poor class of men to this country at a heavy expense. It becomes us now to take these matters into serious consideration, and see if a remedy cannot be provided wherein we may have success—a better successs even for the time that is to come. I suggest these points so that we may hear something from some of you before this meeting separates.

Another and an eventful year has passed away, and now as you are called together, we expect you are prepared through the events of the past to discuss matters concerning the promoting and improving of the breed of dairy cattle. The annual gathering usually furnishes an opportunity of comparing methods and acquiring knowledge of how to breed and feed for the best results. The dairy business has become one of the leading industries of Canada, and the Ayrshire is one of the leading factors of this business, and it becomes us to compliment those men who willingly responded to the sending of their cattle to the World's Fair, and congratulate them on their success, which gives a world wide reputation to Canada, and will help us in time to come. What is wanted now is to stir up everyone who is engaged in breeding to do their best in maintaining the position they have gained, and by breeding and feeding and making the most of the cow good results will certainly follow. There should be no haphazard way in selecting stock, for dairymen choose the best irrespective of cost. Good pedigrees are necessary, but often too much stress is placed on pedigrees. If the animal wanted does not fill the eye and show the points which will constitute a good milker, she should never be allowed to go to milk. There is for that a standard, but seldom acted upon, which often causes disappointment, for at many of our leading exhibitions while some herds are very successful, at other exhibitions they are unsuccessful in competing against the same animals. So long as there is a diversity of opinion as to what constitutes a perfect animal, so long will it be before you can establish a universal breed, and so long as breeders continue to work separately and fail to come together to compare standard, and will disregard principles, so long will they retard progress. Under present circumstances the various authorities differ as to what constitutes perfection. The success of the World's Fair has given Canada a reputation as a stock producing country. This reputation has to be maintained and improved, and to do that we would require to draw frequently from the mother country. Few are able to do that without the combined efforts of the breeders, unless the Canadian Government could be induced to appropriate some of the money that is set apart for immigration purposes to assist the importer to bear the expense of quarantine, which is heavy, and bring the business within the reach of ordinary farmers, which would be a profit to the country.

Gentlemen, there is a great future before you. The dairy industry has increased enormously in the past years; it has reached the amount of thirteen million dollars annually, and will yet attain a higher figure. The future prosperity of Canada is i your hands. You have a market before you, to be supplied with a breed of cattle that has stood the test for the past one hundred and fifty years and have found their way into every country and climate in the inhabitated world, feeding the hungry with finest food and bringing a revenue to their owners. They have proved themselves a breed for the dairy, and in this fair Canada of ours, which, with its genial climate, with its fertile fields and rippling streams is destined for the home of the Ayrshire, and no better inheritance can be bequeathed to the future generations.

Secretary WADE read the minutes of the last annual meeting, and on motion of Mr. MORTON, seconded by Mr. MCCORMICK, they were adopted.

The Secretary then read the report of the executive committee.

REPORT OF THE EXECUTIVE COMMITTEE.

The executive committee beg leave to submit the seventh annual report of the business done by this Association, as furnished by the Secretary for the year ending the 31st of December, 1893.

Registrations.

We have recorded 541 animals this year (243 males and 298 females), and now have 1,429 which will soon be raised to 1,500, for our second volume. We have already got the consent of the Agriculture and Arts Association to commence printing it.

Members.

Forty-eight members have paid subscriptions for the past year. The new ones have had the first volume of the book sent them.

World's Columbian Exposition.

It is very gratifying that such a splendid exhibit was taken from the Dominion. The prize list gave $2,035 for prizes. Out of this amount the Canadians took $1,885, and the Americans only $150. The Canadian prize winners were, first: Daniel Drummond, Petite Coté, Montreal, with eight first prizes, one second and two fourths, amounting to $480, and two gold medals. Second, Wm. Stewart, jr., Menie, with three first prizes, two second prizes and five third prizes, amounting to $445. Third, Thos. Guy, Oshawa, four second prizes, one third and one fourth, amounting to $235. Fourth, R. Robertson, Howick, Que., one first prize, one second and two thirds, amounting to $245. Fifth, Thos. Irving, Montreal, two prizes, three thirds and two fourths, amounting to $205. Sixth, W. & M. Smith, Fairfield Plains, one first prize, one second and two fourths, amounting to $125. Seventh, Jos. Yuill, Carleton Place, one first prize, one second and one fourth, amounting to $90. At our own shows the Ayrshires turned out well, notwithstanding the numbers that had been taken to Chicago. There were also several more imported from Scotland last year.

FINANCIAL REPORT, FOR 1893.

RECEIPTS.

1893		
Jany. 1st,	To cash on hand	$ 16 40
"	" 48 members, $3	144 00
		$160 40

Audited and found correct.

EXPENDITURES.

1893		
Feby. 18th,	By room and stenographer	$ 7 50
Dec. 31	By 12 vols. herd book $2.70	35 10
"	Salary	50 00
"	Balance, cash on hand	67 80
		$160 40

Mr. MORTON: We have every reason to be proud of the position taken by the Ayrshires at the World's Exhibition. They commended themselves to those who were judges, or the prizes would not have been awarded. The Americans do not appreciate the Ayrshires as they ought to, they have been carried away with the Jerseys.

Moved by Mr. GUY, seconded by Mr. McCORMICK, the report of the executive committee be adopted. Carried.

THE AYRSHIRE COW; HER BREEDING, SELECTION AND MANAGEMENT.

The following paper was read by Mr. WM. STEWART, jr., Menie:

It is with pleasure that I come before you at this our fifth annual meeting of the Ayrshire Breeders of Canada as a breeder of that noble animal, the queen of the dairy, the Ayrshire cow, that has won such grand laurels at the great Columbian Exhibition in 1893 for this Canada of ours. It is now twelve years since we started breeding Ayrshires, and each year has brought us greater success, both in breeding and management. The demand for young males and females has been more than we could supply. The public is beginning to realize the fact that the Ayrshire is par excellence the dairy cow, giving a good return for the food consumed; milk of the best proportion for the manufacture of A1 cheese and butter, and most suitable for family use and for shipping, etc. And now that she has come gradually to the front as a dairy cow, it behooves us to use our greatest ability to maintain the reputation she has gained. We must breed from the best and nothing but the best. The breed is no doubt suffering from unqualified local breeders, who are satisfied to breed from almost anything that has got a pedigree, because they can get it cheap, when it ought to go to the shambles. Too many little scrub heifer calves are raised; and the said calf at the same time has perhaps been sired by a little scrub of a yearling, that has been neither bred, fed nor cared for. Too great care cannot be exercised in the selection of our breeding animals, animals that have been bred from both sires and dams of the best producers, both as to quantity and also to quality. The Babcock test should be freely used, and everything that is not up to the standard should be sent to the butcher. The greatest of care should be used in the selection of a sire. See to it that he is the kind of a sire that will suit your females, that his ancestors have been good performers, that his teats are of good size and well placed, that his milk veins are well developed; that he has a good skin and that it is well covered with a good mossy coat of hair, and that he is just that type of animal that will produce performers both in the show ring and dairy.

THE BODY.

The whole forequarters thin in front and gradually increasing in depth and width backward, yet of sufficient breadth and roundness. To insure constitution back should be straight and the loins wide, the hips rather high and well spread, pelvis roomy, long, broad and straight, hook bones wide apart, quarters long, tolerably muscular and full in their upper portions, but moulding into the thighs below, which should have a degree of flatness, thus affording more space for a full udder, the whole carcass thus acquiring increased volume towards its posterior portion. We see that the points as given are those of utility, and that at this stage the udder points and the body points are co-related.

THE SKIN.

In connection with the body and udder the skin is of great value. Between the portion of external covering used for leather and the muscle, there occurs a layer of cellular tissue, which contains a larger or smaller amount of fat cells, and the mellow handling caused by the cells indicates a free circulation throughout this net work. The skin varies from a thin papery hide, covered with a silky hair, to a thick, supple, elastic hide, well coated with hair on the one hand, and a similar variation with harsh hair and coarseness on the other. The thin papery hide indicates quick fattening and a delicate constitution; the thick elastic hide cushioned on fat, which on the flank comes into the hand almost without grasping, indicates the height of vigor accompanied by the fattening tendency. The possessor of this handling endures climatic changes, low quality in his food and neglect with remarkable hardihood, and quickly responds to full feed on good care. The harsh handler is a dull feeder, consumes much food and generally contains more than a just proportion of offal or waste. In the Ayrshire cow we desire neither of these extremes, for it is in the milk product that we wish the food to be utilized and it is almost an unchangeable law of nature. The deficiency in one direction must be compensated for by excess in another, and *vice versa*. A cow that has a moderately thin, loose skin of sufficient elasticity and suppleness of touch without being fat cushioned, with hair soft and mossy, or woolly, if of correct form otherwise will usually milk a large quantity, and when she becomes dry will rapidly come into condition. The dairyman must keep to his line. Milk, not fat, is his profit, and in seeking to excel in both he will be liable to fall below the average of either.

HERD BOOK MATTERS.

"Herd Book Matters" was the subject of a paper written by Mr. H. E. Eyre.

Do not imagine that in selecting his subject I intend to presume to give instructions to a society of men more experienced than myself, neither do I wish to ventilate any grievance of my own, either imaginary or real. My sole purpose is the improvement of our Association and the development of our choice breed. Then I ask, that if in this paper I refer to any change that may have been made in any herd book, not particularly benefiting myself or my friends, you will not consider it the whine of a suppliant or a suit for mercy, but rather an inductive proof of what, in my opinion, may be made better in the future than it has been in the weary, weary past.

Perhaps I would not have introduced this subject but that I am an amateur farmer and breeder, desirous of gaining information from gentlemen here who have the advantage not only of a lengthened experience but also of a well-developed ability, brightened by the obstacles which they have surmounted and sharpened by the keen competition in national and indeed in worldwide contests.

The object of the herd book as a preservative of purity of blood to the breeder and a guarantee of excellence to the purchaser is admitted by all. How then to make it best subserve these requirements, I think may be profitably considered to-day, and I trust that my views will be thoroughly discussed and fearlessly corrected or amended. First, I believe the primary object sought should be to make the book as indisputable a title of property in blood as the county registry is to titles in real estate. A man who pays for an animal upon which to found a herd depending upon a herd book title for purity of blood, and finds, when by time and labor he has built up a herd, that by some alleged irregularity in the pedigree that he has been robbed, not only of his herd, but perhaps the best years of his life, is in the same position as the man who in his early life buys a bush farm, spends years in clearing, improving and adorning it, and then in old age is informed that through some error of perhaps some dead man his title is not valid, and that he must leave, give up his hard earned munificence for old age, to eke out his remaining years repressed by want and chilled penury.

Does someone say, "Pshaw! but this law." Yes, but all law is not justice, and it is the business of the legislators to correct abuses and protect the innocent and the weak from the rapacious and the strong. Much more, then, is it our duty to guard our book against error, and establish it so strongly that no man need fear to build a herd upon it with confidence, that his children and mayhap his grandchildren can some day point to their cattle boasting that they have been in the family for twenty or thirty generations.

But, it is now almost a reproach to exhibit an animal that has not at least imported grandparents, and indeed judges have sometimes been at their wits' end when deciding between a beautiful Canadian bred animal of the highest merit and one imported, but only of medium qualities. Now this is either right or else it is radically wrong. Is it right to neglect the interests of ourselves and our customers to pander to the prosperity of a few longer breeders and importers? Is it the duty of Canadians to minimize and detract from the facilities and productions of their own country, to shed a halo over the mother land beyond the billowy wave? But, gentlemen, it was not the glorification of some other country that made our cheese industry what it is, or developed that cold and bleak land, once said to only consist of acres of snow into the Canada of A.D. 1893, and that surprised the whole world by coolly capturing the best of the Chicago Columbian competition.

Do not think that I fault any man for honoring the land of his parents or the land of his birth, especially when that land is the land of the heather. Far from me be any such thoughts, for when I consider what Auld Scotia has done for us Canucks in giving us the nice, the trim, the beautiful Ayrshires I also wish myself, like many of you, a Scotchman, and notwithstanding my plebiscite inclinations I can nearly excuse you when you keep Hallow'en or "Tak a richt guide willie waught, for Auld Lang Syne."

Yet you will only be fitting sons of noble sires if you apply the industry and ability fostered during generations by "the land of the mountain and the flood," in developing the resources of your adopted land; yes, until it shall be made surpass any other country in the world. The young farmer does not fail to honor his father and mother by refusing to give the money that might wipe out the mortgage on his farm to build a palace for his parents. Neither does the Canadian breeder dishonor the European herds by refusing to acknowledge them better than equally well-bred animals of American nativity. Some of the grandest records made by the noblest specimens of the different dairy breeds have been made, not in Europe, but in America. If the foundation of a herd be pure judicious breeding will not only preserve, but will increase its good qualities. Hence, Mr. President, my conclusion is that in this dairy land of clear air, green pastures, and fresh waters, nativity is not and never can be a reproach either to men or to cattle.

Continuing his remarks, he said: I know on the revision of the Shorthorn Herd Book some of my friends suffered severely, so much so that though they feel inclined to go into Ayrshires they feel there is not stability enough in the herd book. They do not know what time they will be wiped out. One gentleman had a nice herd of Shorthorns, and he lost all but two or three, and it does seem to me when a man places his faith upon a herd book that herd book ought not to be susceptible to change. It has in the past been the case that if some gentleman would come up and say a certain animal was not registered or should not have been registered, but was registered, perhaps, by a man long deceased, that rather than have some one blow about it afterwards there would be some way found of legislating the animal into some bleaker parts. This evidently is not right. For instance, a man has a title to a farm, and some man comes here and says my great grandfather should have had this instead of your great-grandfather. I think the evidence should come from the man that finds the fault. I do not think a man ought to be called upon to prove the purity of animals that have been dead for years. I know one man came to me and said Ayrshires could not be registered. I said that was a mistake. He said the man he bought some Ayrshires from told him there was no herd book for Ayrshires. I told him it was all a mistake.

Secretary WADE: The pedigrees in the Ayrshire Herd Book that were registered started in Canada from some Canadian cow. That was the big idea of the change in the pedigree.

Mr. MORTON, of Hamilton: There is a great deal of truth in the remarks we have listened to. It amounts to this, that if we are not honest the herd book will not make us honest. If the breeders of Ayrshire cattle are not honest in keeping the breed pure, the registering of them is not going to make them pure. So it comes back to those who are engaged in this. If we have the welfare of the breed at heart and seek to protect them, and with all the means in our reach, and elevate the breed, then we will seek to act conscientiously in it, and see that nothing gets into the herd book that should not get in.

Mr. McCORMICK: I may say about this matter of the herd book, people in the Province of Quebec denounced a good deal of our stock as grades. We tried to have a combination of the two Associations of the Province of Quebec and of Ontario at Kingston. The division took place there, and the result was that they would not continue with us because of a certain cow we wanted to continue on, but could not prove sire and dam from importation, and they could not prove otherwise. It was decided they should go into what we call an appendix. That was settled long ago, as far as that is concerned ; it ought not to be debated again. But afterwards the fact came out that Quebec, with all its purity, had a great amount of the same stock which she took out of the book, and had an arbitration to settle that. It was also then decided that those we had thrown out should be put back into our herd book again. Of course, it was not done.

Mr. MORTON : It affords me much pleasure to move a cordial and hearty vote of thanks to these gentlemen who have presented these carefully prepared papers, and who have given us so much information in the matter they deal with.

Mr. MCCORMICK : I have much pleasure in seconding that motion.

The motion was carried.

ELECTION OF OFFICERS.

The following were elected officers for the ensuing year :

President : WM. STEWART, JR , Menie.

Vice-President for Ontario : W. W. BALLANTYNE, Stratford.

Vice-President for Quebec : W. C. EDWARDS, M.P., North Nation Mills.

Vice-President for Manitoba : GEORGE STEELE, Glenboro', Man.

Vice-President for North-West Territories : CLAUDE H. MANNERS, Moosomin, N. W. T.

Vice-President for British Columbia : W. WELLS, Chilliwack, B. C.

Vice-President for Nova Scotia : THOS BLANCHARD, Truro, N. S.

Vice-President for Prince Edward Island : C. C. GARDINER, P. E. I.

Directors : M. Ballantyne, T. Guy, A. Kains, Joseph Yuill, J. McCormick, D. Morton, John Crosby.

Auditors : G. D. W. Green, Toronto, and H. E. Eyre, Harlem.

Delegates to Toronto Industrial Exhibition : James McCormick and W. Stewart, jr.

Delegates to London Western Fair : M. Ballantyne and A. Kains.

Delegates to Ottawa Exhibition : Joseph Yuill and C. Smith.

Judges : Alexander Drummond, of Petite Cote, Quebec ; M. Ballantyne, St. Marys ; H. G. Clark, Brampton ; D. Nicol, Cataraqui : A. Kains, Byron ; James McCormick, Rockton ; James Yuill, Carleton Place ; H. E. Eyre, Harlem ; W. Stewart, Menie ; Wm. Hunter, Lancaster.

President-elect STEWART, on being called to the chair, said : I thank you very much for the honor you have conferred upon me, and I will try, to the best of my ability, to do everything I can to promote the interests of our Association.

Mr. MCCORMICK : I have much pleasure in offering a vote of thanks to the retiring chairman for his gentlemanly action in the chair for the past year. Seconded by Mr. GUY, and carried.

Mr. BALLANTYNE : I thank you for the compliment you have conferred upon me. I have tried to do my best.

President STEWART : The business of the meeting is now ended, gentlemen. We have had a good attendance this year, and next year we hope to have a better.

Mr. EYRE : Before we separate I beg leave to move a vote of thanks of this Association to the gentlemen who attended the Columbian Exposition and won so many prizes for Ontario. I think it is due to them, and that we recognize their efforts in our behalf, and I have much pleasure in moving this vote. Seconded by Mr. MCCORMICK, and carried.

At 4 p.m. the meeting adjourned.

MEETING OF COUNCIL OF AGRICULTURE AND ARTS ASSOCIATION.

A council meeting was held in the Victoria Street Rink, Guelph, on December 11th, 12th and 13th, 1894.

The President, Wm. Dawson, Esq., occupied the chair.

The following members of the council were present: D. P. McKinnon, Joshua Legge, B. Mallory, W. J. Westington, J. C. Snell, N. Awrey, M.P.P., Wm. Dawson, Jas. Rowand, M.P., R. McEwen, Albin Rawlings, Jonathan Sissons.

The Secretary read the minutes of the September meeting, which were adopted by the meeting and signed by the President.

The Secretary reported that there were a great many entries for a special prize of $25 given by the Ingersoll Pork Packing Company.

On motion of Mr. Legge, seconded by Mr. Westington, a second prize of $10 was offered.

On motion of Mr. Legge, seconded by Mr. McEwen, the Guelph band was ordered to be engaged for Wednesday evening at an expense of $20.

The council decided to have the President's address given at the banquet tendered by the Fat Stock Club on Wednesday evening; also speeches from some of the members, as they did not wish to clash with the Breeders' meeting being held in the city hall.

Mr. J. Sissons, who had been appointed treasurer at the September meeting, informed the council that he had considered the matter since then, and had concluded not to resign from the council, but to resign the treasurership instead. His resignation was afterwards accepted, to take place when his successor had given bonds satisfactory to this council.

A deputation consisting of C. G. Burgess, V.S., Listowel; Mr. Gibbs, V.S., St. Marys, and J. J. Walker, V.S., Londesboro', were introduced to the council by R. McEwen.

They asked for more stringency in the rules of the Ontario Veterinary College, in the way of a higher standard of matriculation and a longer term of tuition.

Messrs. Burgess and Walker spoke at some length on the subject, and Dr. Gibbs read the following address:

VETERINARY AND AGRICULTURAL SCIENCE.

The educated agriculturist takes a much wider view in these days than he did twenty years ago; and as stock more and more supersedes corn as the object of his labors, so his art and ours, his science and ours will be more closely related. This will be good for us if we are able to demonstrate that our assistance and advice is worth having. Our training ought to give us a clear superiority as experts in reference to domestic animals in health and disease. On all questions, the solution of which requires experience, guided by physiological and pathological knowledge, we ought to be so far in advance of the stock owner that he cannot fail to recognize our technical value. At present we, as a profession, are quite able to claim and hold this position, but are we advancing as rapidly as the stock owner? Is there any probability that he may in the immediate future bring his knowledge of this physiology of animal life level with ours and grasp the principles of sanitation and preventive medicine as firmly as we do?

These questions require our most serious attention. The scientific advance of the agriculturist is every way desirable, but our self interest requires that our progress shall equal his, and that we shall retain our special scientific superiority.

Complaints are made of overcrowding in the veterinary profession, and it is widely asserted that remunerative employment is less easily obtained than formerly. It is acknowledged that the majority of practitioners look to the horse as affording them most employment, and that many devote their attention solely to that animal. It has been pointed out that the number and value of the other domestic animals far exceed that of horses, and that the ox, pig and dog all afford scope for the talents of veterinarians who understand them.

It is evident that practitioners are sent out by our colleges ignorant of all but horses; the stock owner will not find in them the technical skill he requires to assist him. It is also evident that the treatment of isolated cases of indigestion, or even the performance of surgical operations cannot be compared in importance to the advice which checks the spread of contagious disease or prevents the origin of maladies which affect whole herds or flocks.

What are we doing to prove the intelligence of our members and to increase the extent and thoroughness of their knowledge? Have we raised the standard of our matriculation examination? Have we widened our course of study or increased the stringency of our professional tests? We have not. What are the agriculturists doing? Their colleges are increasing in number and yearly drawing more pupils to their classes. Their societies are extending their operations and concentrating their energies on stock—its breeding, rearing, feeding and general management. Their press and literature is rapidly progressing, both in quantity and quality, and they have all the advantages to be derived from the direct ministerial representation in the government of the country. Verily agricultural science is treading on the heels of veterinary science, and we must move on if we desire to retain our proper relative position. Hygiene and preventive medicine must be more insisted on by the Agriculture and Arts Association at our veterinary colleges if our graduates are to hold their own. The horse must not be allowed to monopolize the attention of our students. We must have better educated men, and we must teach them more thoroughly the essentials of their craft.

No more important question can be raised than the best method of testing our graduates; upon the stamp of man entering our profession depends our future position, and every one of us is interested in admitting the best man and keeping out the worst. We must do justice to ourselves, and we desire to do no injustice to the student or the public. If our examination test is not perfect we must do what we can to improve it, and every assistance afforded us must be accepted. "Examinations" may be regarded from three points of view: from that of the student, from that of the teacher and from that of the public, and in the recognition of the fact that there are three interests involved lies the solution of all the difficulties attendant on the question of the proper methods to be adopted in examinations. We would add a fourth interest—that of the professional body the candidate wishes to join. The veterinary question has to consider itself, and must take care that its graduates are men who will reflect credit upon the body corporate which they propose to enter.

COMMUNICATIONS.

The following is a copy of resolution from the Western Ontario Veterinary Medical Association:

1st The assumption of control of the Ontario Veterinary College by the Government.

2nd. The appointment of the Board of Examiners for the said College by a medical council composed of qualified veterinarians.

3rd. That the Ontario Veterinary College be affiliated with either Trinity or Toronto University, and that pressure be brought to bear on the Agriculture and Arts Association with this end in view.

4th. Lengthening the term of tuition to three sessions composed of five months each.

5th. That every student must practice with a qualified veterinarian during vacations and produce a certificate duly certified from such veterinarian.

6th. That the standard of entrance be raised to an examination equal to an entrance to High School.

These are the main resolutions passed having any bearing on anything outside of our own general meeting.

(Signed) W. R. Carr, V.S.,
Secretary.

A letter was read from the Hon. John Dryden thanking the council for a resolution passed at the last meeting complimenting him on the success of the Columbian Exhibition.

The following letters were received from D. M. Macpherson, M.P.P. :

LANCASTER, Ont., Oct. 18th, 1894.

DEAR SIR,—I beg to submit to yourself to lay before the Board at first session a scheme of considerable importance to the farmers of Canada, more especially in the Province of Ontario.

As the volume of work which the Board has under its control has somewhat lessened of late, and the need of the Board doing important work in the interests of the farmers is great, I desire to submit a new line of work for their careful consideration. After a great deal of study, much experiment and carefully noted results the following important improvements are necessary to be brought about before our province will make great advances.

1. An improved plan of farm work as to cause greater profit and an increase from year to year.
2. Increased value of farm lands in all the older districts.
3. Increase of population throughout the rural districts.
4. Improvement of public roads, making them in such a condition as to place them on a permanent basis to carry the ordinary traffic of the country in all seasons.

I believe that I have discovered a plan of work and methods of procedure which shall accomplish this in a very short while, and believing that it would redound to the credit of the Board and give it considerable prestige in the future if they would undertake to establish such results (the four above stated) I beg to make this offer : If the Board will supply the necessary funds for ten years to start one or more farmers as a public test to show what can be done in the direction stated, I will agree to supply such funds as will realize the following results : Will select a poor, run out grain or dairy farm, one that is publicly known to be unprofitable to work—the farm 100 acres (more or less) is worth say $30 per acre, and by spending $30 per acre more for special permanent improvements—at the current rate of interest of the country, say four per cent.—in ten years (perhaps less) will give the following results : Return principal and interest. Will put on or employ 1,000 or 1,200 days' work as the average of the year, instead of now 500 to 600, which is the average of 100-acre farms in Ontario. Will show a net profit of six per cent. on $120 per acre, or double the original cost. This will be done for the last year's average of the ten-year term.

Will also construct five acres of public road on an improved basis, say six inches of broken stone and covered with gravel (this five acres is about the average amount of public road to each 100-acre farm of the township). In accomplishing these four results you will readily admit it covers the first desirable conditions spoken of for the growth and development of our country, profitable farm work, increased value of farm property, increase of farm labor and public road improvement. If such results can be secured they ought to be, and the public should know how they are done, as no experimental farm, model farm or state has ever undertaken to demonstrate how a poor worn-out farm can be made to give profitable results from its ordinary working and increase its capital value. It is in my opinion high time that something should be done in the direction spoken of. And should the Board think well of such a proposal I shall gladly meet them at their winter meeting and there more fully explain this matter. I could in a private way develop this matter for a local benefit, but I wish to have the benefit of as public a kind as possible and the whole country receive equal benefit if such benefit can be produced.

Yours very truly,

(Signed) D. M. MACPHERSON.

LANCASTER, Oct. 26th, 1894.

DEAR SIR,—Your esteemed reply to my letter of the 18th is duly before me, and I am pleased you have taken a favorable view of my scheme of new agricultural improvement.

I might further say in regard to this matter, that in viewing the work of our old experimental and model farms, the practical results to prevent a decline from farm work in all our provinces, also a decline of value of farm property, are conclusive evidences to me that something of a more practical nature should be undertaken, so as to change, if possible, the above mentioned deplorable state of things and all the other injurious effects it has on the means of educating the youth of our rural districts and encouraging the young men to remain in the country. After carefully reading up all the Canadian, United States and European governmental agricultural farms, I have not yet come across a single instance in all these where the practical experiment of demonstrating whether it is possible under ordinary average circumstances to change the condition of a poor farmer owning a poor farm, running down in value and results from working it from year to year to a condition that the same farmer and farm shall be a good farmer owning a good farm, which shall give good practical results, each year increasing, as well as a corresponding increased value. This is to be accomplished in a reasonable short time, say ten years, and at no expense, public or private, at the end of that period beyond executive direction. This idea of undertaking to make a poor farmer and poor farm to be a good farmer and good farm in a reasonably short time, at very little expense, as well as building the public roads on permanent basis to the good, and all the other benefits accruing, such as increase population, improved education and social relations evolving from increased financial prosperity, is the one idea I have in submitting this proposition to the Board for their consideration to promote—the scheme embracing so much expectation and aiming to attain so much of such vital importance to our country and to our people, might, I fear, cause the members of the Board to mistrust its practicability and think it is a fake, but I can assure the members of the Board that I have tested this matter in two practical and separate instances, which have given much better results than what I have led the Board to expect, and should I attempt to trifle with the work of the Board (all of the members I esteem so highly) as well as to become a public reproach for deceiving the public to attempt such a thing would be the height of folly without I am sure of my ground and certain of my claim.

My ultimate aim is to promote the following demonstration: First, reform one farmer and one farm in a township, then reform one township in a county, then one county in a province, then one province in the Dominion, then the whole Dominion. How far this aim can be attained is problematical, and the degree is just in proportion to beginning right and carrying on the good work in the right way. This can, in my opinion, be obtained only by a few practical studious men supported by the different government of our country—township, county, province and Dominion working harmoniously, hand in hand for a common good and a worthy purpose. Patriotism not partyism, selfdenial not selfishness, honesty of purpose not dishonesty, should be the motives and conscientious principles indued in all our people to promote our country's welfare and the world's advance in true civilization. A simple experiment on a small scale will not cost much money, and if it is possible to attain some success and much experience, if not a full success, at first, yet by persistent effort ably directed it might lead possibly to develop a plan of details so complete as to ultimately produce the results aimed at, and if such proof is obtained to fully establish the correctness of the theoretical aim, then if such can be obtained without very much cost or risk it is not unreasonable to ask for the Board's support to assist in carrying it out, and thereby mark a new era in the good work of the Agriculture and Arts Association of the Province of Ontario. I have prolonged this letter, I fear too much, but the numerous details covering this important work and being at its first inception to make public necessarily demands fuller explanation than at first appears necessary, compels me when entering in correspondence to be rather lengthy. Should the Board and yourself wish for any further information I shall be most pleased to respond as far as I am able.

Yours truly,

(Signed) D. M. Macpherson.

After considering these letters it was moved by Joshua Legge, seconded by A. Rawlings, and resolved:

"That this council, having considered the valuable suggestions contained in Mr. Macpherson's letters, *re* reclamation of poor farms by which individual and national wealth would be largely augmented, desires to express its appreciation of his efforts to enlarge the scope and usefulness of this Association, and instructs the Secretary to request his presence at the next meeting of this council to discuss in detail the proposition he has made."

N. Awrey, M P.P., then made a verbal report, stating that he attended, as per resolution, the two days' session of the Deep Waterways meeting and thought it was too large a scheme to be carried out by any but a Government.

R. McEwen also verbally reported that in company with Dr. A. Smith, De Warren Green and H. Wade, Secretary, they waited on Lt.-Col. Otter, D.A.G., to ask for the drill shed for one week to hold our horse show in. They had been received with every courtesy, and he promised to see the different commanding officers of the city regiments, and if their consent could be obtained he would be pleased to let us have the building, although he was afraid if they did it would interfere with the drill of the regiments.

Mr. Wade also explained that since then Mr. Beardmore, master of the hunt club, and Mr. Houston, Secretary, had waited on him and expressed their willingness to enter into partnership with this Association in giving a horse show, and would work up the saddle and driving proportion of the show, also promised to get the society element to attend.

Mr. Awrey spoke in favor of such a show, and it was resolved that a special committee be appointed with power to make arrangements for such a show at the new drill shed or elsewhere.

On motion of Jas. Rowand, M.P., seconded by Albin Rawlings, that Messrs. N. Awrey, M.P.P., R. McEwen, J. C. Snell and H. Wade, Secretary, constitute said Special Committee.

Thursday, Dec. 13th, 2 o'clock, p.m.

The Council Meeting resumed with the same members present.

On motion of J. Legge, seconded by A. Rawlings, John I. Hobson, of Mosboro', was re-appointed auditor. The Hon. John Dryden, Minister of Agriculture, also appointed Wm. Dickie, of Oshawa, as one of the auditors.

PROVINCIAL PLOWING MATCHES.

DISTRICTS 1, 2 AND 3.

To the President and Members of the Council of the Agriculture and Arts Association :

I beg leave to submit the following report of the match held in Districts Nos. 1, 2 and 3, for the year 1894. As Mr. W. C. Edwards and Mr. Joshua Legge could not be present, the duty of carrying on the work was undertaken by the undersigned, assisted by the officers of the Electoral District Agricultural Society, of Cornwall.

(Signed) D. P. MCKINNON, South Finch.

I herewith present the following reports culled from the press :

THE PROVINCIAL PLOWING MATCH.

The weather favored the promoters of the Provincial Plowing Match, and they had as fine a day as could have been desired for the event. The field selected on Mr. Michael Johnston's farm, on Toll Gate Road, was well adapted for the purpose, and the various competitions passed off very satisfactorily, with the exception that there were not as many competitors as there should have been. A number of flags were hoisted in different parts of the field, and a very attractive scene was presented from the roadside when the plowmen were all at work. The plowmen, judges and other visitors were entertained to lunch on the ground, several of the directors of the Cornwall Agricultural Society being present to do the honors. The plowmen commenced shortly after nine o'clock, and it was nearly five when the last furrow was turned. The work of the several competitors was watched with keen interest, and quite a little excitement was created by the uniform excellence of the plowing of the principal prize-winners. The result was as follows :

CLASS 1: A. C. McPail, Vernon, 1 ; J. T. Shields, Cornwall Township, 2 ; John Esdaile, Cornwall Township, 3.

CLASS 2 : Geo. Smith, Finch, 1 ; Thurston Doherty, Glen Walter, 2 ; Ambrose Gallingher, Cornwall, 3 ; A. J. McDonald, Cornwall, 4 ; R. W. Duff, Avonmore, 5 ; H. Wolstenholme, Moulinette, 6.

CLASS 3 : W. McCleave, Osnabruck, 1 ; W. Esdaile, Cornwall, 2.

Judges : Jonathan Cross, President Prescott County Farmers' Institute, South Finch ; Robt. Wallace, graduate of the Ontario Agricultural College, Osnabruck Centre.

In presenting the prizes, Mr. D. P. McKinnon made a few congratulatory remarks, referring especially to the handsome gold medal given by Major R. R. McLennan, M.P. He paid the worthy gentleman a well-merited compliment on his liberality, and the deep interest manifested by him in matters affecting the welfare of the farmers. He said that Mr. McPhail, the young man who had won the gold medal, had won it strictly on his merits, and he hoped he would long be spared to wear the beautiful trophy. Complimentary references were made to the judges and the entertainment committee, and brief responses were made by Messrs. Cross and McLean on behalf of the former, and Messrs. Duncan Monroe and W. Gibbens for the latter.

The selection of Cornwall for the Provincial Matches was due to the active interest of Mr. D. P. McKinnon, the representative of this district of the Agriculture and Arts Association, and the success of the gathering was due to his good management. There was only one thing to be regretted, and that was that there was not a better turnout of plowmen. There are many old prize winners in the united counties and if they have given up entering into these competitions they have sons old enough to take their places, who should, with the benefit of their experience, be able to maintain the high reputation won by them.

Mr. McPhail, the young man who won the medal is about 23 or 24 years of age. He resides in Russell County, and is the son of a provincial prize plowman. His work was splendidly done. The other competitors for this prize are both provincial prize-winners. Their work was also perfect, at least to the eye of the ordinary observer, and the judges must have found the task of deciding between them no easy one.

The medal is a splendid specimen of the goldsmith's art. It is in the form of a quarterfoil, very massive and suspended to a heavy cross bar surmounted by a beaver, the words "Provincial Plowing Match, 1894," being engraved on the bar. The medal is decorated with maple leaves, and very clearly engraved. On a raised circle in the centre is a plowman with his team. On the reverse side is engraved the following: "Presented by Major R. J. McLennan, M.P., won by A. C. McPhail, Cornwall, 1894." (*Cornwall Standard.*)

Quite a large gathering of the leading agriculturists of Eastern Ontario assembled on Mr. M. Johnston's farm in Cornwall Township, on the 18th instant, to witness the Provincial Plowing Match which took place under the joint auspices of the Agriculture and Arts Association, represented by Mr. D. P. McKinnon, the energetic and popular representative of the Eastern Section, and the Board of Directors of the town and township of Cornwall Agricultural Society. The day was all that could be desired. The soil, although somewhat stubborn (being heavy clay loam with some small stones interspersed) was fairly good, and the competitors were as a whole a fair sample of Ontario plowmen. The entries were not as numerous as were expected. Eleven plowed in all. The crowd which was assembled watched the proceedings with great interest until the last furrow was turned, when the judges immediately entered upon their duties and in a short time handed in their awards to the Secretary, Mr. Wood. Then Mr. McKinnon, on behalf of the Agriculture and Arts Association, in an eloquent and pleasing address, complimented the Cornwall Board of Directors for their hospitality and energy, the plowmen for their good work and the judges for the highly satisfactory manner in which they had made their awards. He also rendered a just meed of praise to R. R. McLennan, M.P., Glengarry, for the magnificent gold medal presented by him for competition at this match, and wound up by saying that it was a matter of great pride to him to know that there was a young native-born Canadian residing in Eastern Ontario, so worthy as the winner of the gold medal (Mr. A. McPhail), and also that Eastern Ontario, he was certain, in the matter of plowing could hold her own against all comers. The distribution of the prizes was then proceeded with by Mr. McKinnon, each successful competitor's name as announced, being greeted with hearty cheers by the large and good-natured crowd. After the presentation of prizes a vote of thanks was tendered to the directors of the Cornwall Society, who had in every way endeavored to make the affair both pleasant and successful. D. Monroe, Esq., replying in his usual inimitable style, saying, among many other pleasant and trite things, that while he approved of athletic games he believed that plowing was the noblest of them all. The judges came next, and Jonathan Cross, Esq., President of the Farmers' Institute of Prescott county, was called on to reply. Mr. Cross expressed his thanks for the honor conferred on him through Mr. McKinnon, for the kindness experienced at the hands of the Cornwall people whom he had met that day, and also the hope that the county of Prescott would shortly be honored by having the Provincial Plowing Match, when, as an old member of that county Agricultural Board, he would promise all a good field to work in, a field of good plowmen, and the heartiest endeavor on the part of the Prescott Board to make it pleasant to all who might come to the match. The proceedings were brought to a close singing the National Anthem and cheers for the Queen and Mr. McKinnon. The judges were Jonathan Cross, Esq, Warden of Prescott and Russell, and President of the Farmers' Institute, County of Prescott; Jas. McLean, Esq, President of Farmers' Institute, County of Stormont, and Robt. Vallance, Esq., of Osnabruck, graduate of Ontario Agricultural College, Guelph. (*Eastern Ontario Review.*)

PLOWING MATCH AT FINCH.

Owing to several of the classes not being filled at the recent Provincial Plowing Match in Cornwall, a balance was left of the Government grant, which, with some added subscriptions, will be given in prizes at a match to be held in South Finch, on Tuesday next, 6th instant. There will be three classes: the first open to all; the second to men who never won a first or second at a plowing match, and the third to young men under twenty-one years of age. In all, $60 will be distributed among the successful contestants, and it is expected there will be a large turnout if the weather is favorable. Entries can be made with D. P. McKinnon, Chairman, up to 9 : 30 the morning of the match. The plowmen of Finch and surrounding townships are certainly under obligations to Mr. McKinnon for giving them an opportunity to show their skill at one of the most important departments of farming. (*Eastern Ontario Review.*)

The heavy fall of snow on Monday would almost have discouraged anybody, but so great was the interest at the Provincial Plowing Match, held in South Finch on Tuesday, that no less than fourteen plowmen turned out, and the number would have been doubled had it not been thought impossible by many that the match would go on. Many of the competitors were from a distance, including the gold medalist A. C. McPhail, of Vernon. During the afternoon some two hundred or three hundred spectators were on the ground, much interested in the splendid work being done though the snow was a hindrance. The soil was excellent and well-adapted for good work. In the first and second classes the competition was very keen, and it was nearly dark when it was finished. All hands then adjourned to Campbell's hotel, where the Chairman of the Committee, D. P. McKinnon, read the awards of the judges, and gave each successful plowman a nicely printed card as well as the prize money. The awards were as follows :

CLASS 1 : A. C. McPhail, Vernon ; 2, Jas. McCleave, Osnabruck Centre ; 3, Geo. Smith, South Finch ; 4, Jas. Boldick, Crysler ; 5 extra, D. H. McLean, South Finch.

CLASS 2 : 1, John Currie, Crysler ; 2, J. S. Morgan, Osnabruck Centre ; 3, O. C. Pitts, Osnabruck Centre ; 4, Patrick Masterson ; 5, John Merkley, South Finch ; John Boldick, Crysler.

CLASS 3 : 1, W. McCleave, Osnabruck Centre ; 2, Jas. Morgan, Osnabruck Centre ; 3, Wm. Munro, South Finch.

Judges : Mathew Hudson, South Finch ; Alvin O. Makell, Osnabruck Centre ; Thos. Henry, Berwick.

Much credit is due to the Chairman, Mr. McKinnon, for his untiring efforts, to the people of South Finch and vicinity for their liberality for subscribing to the prize list, and to the directors of the township Agricultural Society for their assistance in various ways. It is expected that the township society will take the matter in hand and arrange an annual match to encourage local talent, and in time turn out as good plowmen as any of the western counties. (*Eastern Ontario Review.*)

The plowing match at South Finch, on the 6th inst., was quite a success. Notwithstanding the fact that there was a heavy fall of snow on the previous day, there were fourteen entries made by the time the work had commenced, many of them from a distance. To the delight of the plowmen and spectators, the promising young McPhail, of Vernon, who won the gold medal at Cornwall, took his position and entered the contest, evidently expecting a hard struggle for the prize. Spectators numbering between two and three hundred people were present. Some very fine work was done, although the snow at first seemed to bother the plowmen. The field selected was a very good one, the soil being in splendid condition to show the work to advantage. The competition in classes one and two was very keen, each competitor working hard for first prize, and being pressed for time they pushed on with all possible speed. When they finished their respective lands it was quite dark. The report of the judges was given at Mr. Campbell's hotel on the plowmen and the spectators re-assembling on their return from the field. D. P. McKinnon read the award of the judges and presented the prizes to the successful competitors, which are highly prized by them. As is usual, the great interest centered in class 1. Mr. A. C. McPhail was again awarded first prize, with Mr. Jas. McCleave, of Osnabruck a close second. The work done in each class was exceptionally good, and the only regret is that the prizes were not larger ; for they all deserved a larger prize for the superior work done by all who entered the contest.

Much credit is due to the people of South Finch and vicinity for their liberality, and also to the Board of Directors of the Township Agricultural Society, for the part they took and the money subscribed in order to make the plowing match the decided success it was. It is expected that the Township Agricultural Society will in future take up the work of conducting an annual match, to encourage the young that they may make the reputation that the plowmen of Markham, Scarboro', Waterloo, Osgoode, Perth and the Oxfords have make for their counties and townships, who can count gold medalist plowmen by the score, as the results of the Agricultural Societies making the plowing match an annual important event. (*Cornwall Standard.*)

DISTRICTS NOS. 4, 5 AND 6.

The annual plowing match for the group, comprising Divisions 4, 5 and 6, was held under the joint auspices of the Agriculture and Arts Association and the East York Plowing Association, held on the 8th of November on the farm of Mr. Wm. Milliken, of Hagerman's Corners, in the Township of Markham, and, we believe, was the largest and most successful ever held in the group. The day was fine, the attendance of spectators large and deeply interested. Among the visitors were the Lieutenant-Governor of the Province, Hon. G. A. Kirkpatrick, the Hon. John Dryden, Minister of Agriculture, J. C. Paterson, Eastwood, and H. Wade, Secretary of the Agriculture and Arts Association.

Sixty-two plowmen competed for the prizes, which were unusually liberal; the $150 granted by this Association being supplemented by the local association, by manufacturers and business men of the surrounding towns and city of Toronto.

The work performed was of a very high order, which was to be expected from the reputation of the Markham and Scarboro' plowmen. Yet the first prize in the first class was not won by a local man, but by Spencer Crowley, of Innisfil, near Barrie, who may feel proud of his success in such a large and keen competition.

It is probably safe to say that never at any former match in Ontario has been seen so many plowmen doing nice uniformly good work.

There was scarcely an average and certainly not an inferior ridge in all the three fields occupied, and it is gratifying to know that so many of our young farmers are yet found who take a pride in drawing a straight furrow and doing their work well.

Prizes were also given for the best young team, for the best finish in sod, and in red or plowed land, and for the best turnout, which brought out a number of grandly harnessed teams; the polished harness, collars and bridles bedecked with ribbons adding greatly to the scene, the first prize going to Mr. R. J. McLean for Mr. Robt. Davies' beautiful pair of Clydesdale mares that have so often won in the harness section of the fall exhibitions.

The following is taken from the *Mail* report of the show:

The Provincial Plowing Match, held under the joint auspices of the Agriculture and Arts Association and the East York Plowmen's Association, took place yesterday on the farm of Mr. Wm. Milliken, at Hagerman postoffice, East York. The day was an ideal one, the very bracing air in the afternoon turning into a genial atmosphere as the day wore on. The crowd was estimated at 2,000 or more, composed of sturdy yeomen of East York and the fair members of their families. The occasion was graced by the presence of His Honor Lieutenant-Governor Kirkpatrick; Hon. John Dryden; John Richardson, M.P.P.; W. F. McLean, M.P.; Jonathan Slater, reeve; Walter Scott, deputy reeve of Markham township; J. C. Snell, the well-known breeder; Henry Wade; Peter Christie, Manchester, and others. There were sixty-two plows in the match, and the work done, the turnout of horses, and the success of the event have never been surpassed in York county. From long distances came these lusty, keen guides of the plow. The counties of Grey, Simcoe, Ontario, as well as York were represented, and right earnestly and carefully was every ridge turned from crown to furrow. The fields were in first-class order, the soils in capital form, and the competitors had every opportunity of showing their skill to the best advantage, and the result, taken as a whole, was such that any enthusiastic farmer might well be proud of. The work of the best turned lands possessed a high degree of excellence, and those which were ranked, comparatively speaking, as inferior, showed great skill in handling the plow. From twenty to twenty-five acres were plowed during the match, and excellently well plowed too. Mr. Milliken's farm is beautifully situated, the dwelling house occupying a commanding position on the top of a gentle eminence, from which a view having a magnificent sweep of thirty miles at least is obtained. From the lawn in front of the house the scene of the field of contest was lively and picturesque. The good-natured and interested crowd, strolling and critically eyeing along the end ridges; the heavy Clydesdale teams pulling steadily with measured step, decked out in glittering harness of black and brass, decorated with ribbons of most gaudy hue; the keen-eyed plowmen in their natty costumes, straining every nerve to do their best—all this made up a pleasant scene and it was no wonder the large crowd found it so enjoyable as it evidently did. At 10.15 a.m. the signal was given to start, and promptly the reins were tightened and the plow inserted in the loamy soil. Until four o'clock the work went on, and then the judges began their work in earnest. In the course of the afternoon a photograph of the field, including a group of special visitors, was taken by Mr. Meton of Stouffville.

A number of the visitors were entertained to dinner by Mr. Milliken at his residence, after which the host expressed his great pleasure at the success of the match. He felt honored by the visit of the Lieutenant-Governor, Hon. John Dryden and others who had evinced so much interest in the event. As all present could see for themselves, the match was above the average and a great success. Last spring he and Mr. Rennie had waited upon the Agriculture and Arts Association and obtained from them the provincial grant of $150, which had helped the local association very much. They were thus able to offer liberal prizes, and the competition being open to the Dominion, first-class plowmen had been attracted from long distances. For the grant they were grateful, and he would take the opportunity now presented to thank Mr. Dryden, Mr. Wade, and Mr. Snell and other directors of the Association for the appropriation. These plowing were an incentive to those engaged in one of the most important branches of farm work. Good plowing, good teams and good habits were fostered and encouraged by the inducements of rivalry and the prize list. He hoped the annual matches of the local association would long prosper. Mr. Milliken, at the close of his address, received the thanks of his guests for his hospitality and courtesy.

The directors of the match were from the Agriculture and Arts Association, Messrs. J. C. Snell, W. J. Westington, and B. Mallory; from the East York Plowmen's Association, John Little, Alex. Doherty, Geo. Gormley, John Weldrick, Robt. Petch, Arthur Quantz, Wm. Stiver, Wm. McDonald, F. W. Jacks, Geo. Forester, John Lawrie, Frank Marsh, Wm. Milliken, president; Simpson Rennie, vice-president; Thomas Hood, secretary-treasurer.

The judges were as follows: Classes 1 and 3, Adam Hood, Hagerman; Thos. Ross, Strange; J. Coates, Shirley. Classes 2 and 5, John Weir, Malvern; Peter Christie, Manchester; Chas. Brodie, Aurora. Classes 4, 6, 7 and 8, John Morgan, Willowdale; Geo. Lawson, King; John Martin, Raglan. On horses, G. J. Boag, Ravenshoe; Robt. Canning, Hagerman; Frank Quantz, Barrie.

THE PRIZE LIST.

CLASS 1--Sod; open (12 entries): 1st, Spencer Crowley, Innisfil; 2nd, Frank Weir, Scarboro; 3rd, R. J. Maclean, York; 4th, Jas. Hood, Markham; 5th, J. Mark, Gilliham; 6th, Thos. Little, Scarboro'.

CLASS 2—Sod; open to plowmen who have never taken a first prize in any society's match in second class, or any prize in first class (12 entries): 1st, Robt. Rennie, Scarboro'; 2nd, Alex. Stirling, Scarboro'; 3rd, Jas. MacLean. Vaughan; 4th, Wm. Ness, Markham; 5th Thos. Shadlock, Scarboro'; 6th, Wesley Bennett, Scarboro'.

CLASS 3—Sod; open to boys under eighteen years of age (48 entries): 1st, R. E. Pardon, Whitby; 2nd, Walter Hood, Markham; 3rd, Walter Pilkie, Scarboro; 4th, Robt. Stiver, Markham.

CLASS 4—Sod; open to either riding or walking jointer plows (2 entries), 1st, John Copperthwaite, Markham; 2nd, Andrew Thompson, Scarboro'.

CLASS 5—In red land; open to all plowmen who have never taken a prize at any match (8 entries): 1st, Joseph Nash, Scarboro'; 2nd, Thos. Craig, Scarboro'; 3rd, William Ogg, Markham; 4th, Jas. Copperthwaite, Vaughan; 5th, John Loveless, Scarboro'; 6th, Wm. Doherty, Scarboro'.

CLASS 6—In red land; open to plowmen who have never taken a first or second prize in a first or second class in sod, or a first prize in stubble or red land (12 entries): 1st, Arch. Bennett, Scarboro'; 2nd, Thos. Bell, Scarboro'; 3rd, John Monk, Scarboro; 4th, Albert Mason, Scarboro'; 5th, Robt. Chapman, Scarboro'; 6th, Thos. Jackson, Scarboro'; 7th, F. G. Collins, Pickering; 8th, Gordon Beare, Scarboro'.

CLASS 7—In red land; open to boys under 16 years of age (8 entries): 1st, Campbell Blakeley, Reach; 2nd, E. Willis, Scarboro'; 3rd, J. M. Coates, Reach; 4th, Wilbur Vipond, Whitby; 5th, Wm. Maxwell, Scarboro'.

CLASS 8—In red land; open to plowmen using two-furrowed sulky plow (3 entries): 1st, Jas. Thackater, York; 2nd, Alex. Weir, Scarboro'; 3rd. David Shadlock, Scarboro'.

Special Prizes.

Best going team in first and second classes: J. Mark Gilliham, King.

Best turn out in sod field: 1st, R. J. McLean, Thorncliffe; 2nd, Thos. Little, Scarboro; 3rd, Robt. Ormerod, Scarboro'.

Best turn out in red land: R. Stiver, Markham.

Best going team in boys' class in red land: Wm. Maxwell, Scarboro'.

Best finish in sod field: Spencer Crowley, Innisfil.

Best finish in red land: Arch. Bennett, Scarboro'.

Best finish in sod for boys: R. E. Pardon, Whitby.

Best finish in red land for boys: Campbell Blakeley, Reach.

DISTRICTS NOS. 7 8 AND 9.

There was no match held this year on account of some misunderstanding with Galt.

DISTRICTS NOS. 10, 11, 12 AND 13.

The Provincial Plowing Match for the four districts, Nos. 10, 11, 12 and 13, under the auspices of the Agriculture and Arts Association and the Agricultural Societies of East and West Lambton, was held on the farm of A. E. Edwards, Esq , in Petrolea, on Friday, Nov. 23rd. There were 24 competitors. The number would have been larger had the match not been postponed from the 14th until the 23rd, which could not be avoided owing to the heavy fall of snow on the 10th, which in some localities in the county fell as much as twenty-eight inches. This put the managing committee to a great deal of extra expense on account of having to call two extra meetings and have a reprint of all bills, posters and prize lists. Notwithstanding, however, the promoters and spectators were exceedingly well pleased with their success, so much so that it is their intention to have one every year. Two hundred dollars were offered in prizes, given by their representative of the Agriculture and Arts Association for this district, and a large number of special prizes given by the people of Petrolea, who also showed their interest by their generous hospitality to both plowmen and their horses. The following are the names of the successful plowmen in their several classes :

PRIZE LIST.

Men's professional, on sod: 1st, Arch. McMillen, Sarnia, $20 ; 2nd, Jas. Welsh, Warwick, $15; 3rd, Jas. Duncan Moore $10.

Men's non-professional, on sod : 1st, Jas. P. Taylor, Sombra, $15 ; 2nd. Wm. Martin, Warwick, $12 ; 3rd, P. Hunter, Enniskillen, $10.

Boys under 17 years of age, on sod : W. J. Duncan, Moore, $12.

Men's non-professional, on stubble : 1st, Robt. Duncan, Moore, $10 ; 2nd, Robt. Hallam, Warwick, $8 ; 3rd. W. A. Broughton, Sarnia, $6 ; 4th, David Mann, Plympton, $6.

Boys under 17, on stubble: Alex. McPhedran, Plympton, $10.

Sulky plow, on stubble, 1st, Duncan Dewar, Watford, $12 ; 2nd, J. R. Smith, Plympton, $8.

The day was fine for both plowing, plowmen and visitors. The signal was given to start at 10 o'clock a.m., and the lines were quickly drawn. The sod field was not of the best, being loose and uneven surface. The stubble ground was in fine tilth and some very good work was done in both fields.

There were between five and six hundred spectators out in the afternoon. All were unanimous in saying that the first plowing match held in this section for many years was a decided success. The Agricultural Societies of East and West Lambton beg to acknowledge the services of their representative, A. Rawlings, Esq., in securing the grant from the Agriculture and Arts Association for this district.

A. R. McGregor,
Treasurer Provincial Plowing Match.

APPOINTMENT OF TREASURER.

On recommendation of J. C. Snell, it was moved by B. Mallory, of Frankford, and seconded by W. J. Westington, that Mr. David Kirkwood, of Brampton, be appointed treasurer at a salary of one hundred and twenty-five dollars per annum without expenses, and that he give security for $5,000 to the satisfaction of J. C. Snell. Carried.

The secretary was instructed to write to Principal Jas. Mills of the Ontario Agricultural College for a cheque for $25.00 promised by him to the Fat Stock Club, and by the Minister of Agriculture to the Agriculture and Arts Association, for stall room for cattle, and that when received it be sent to the Fat Stock Club of Guelph.

GUELPH, December 13th, 1894.

The Finance Committee met, the following members being present : Messrs. McEwen, Chairman Awrey, Rawlings, McKinnon and Dawson.

REPORT OF FINANCE COMMITTEE.

Your Committee beg to report that accounts to the amount of $2,084.55, initialed by the chairman according to your instructions, have been paid.

In the matter of your tenant, R. Brown, the committee recommend that the secretary be instructed to authorize our solicitors to have Brown brought up before the judge on a judgment summons, as recommended in the letter of December 6th.

Your Committee beg leave to report that the tender of Hunter, Rose & Co. for printing the Clydesdale stud book be accepted, conditional upon their printing 500 copies instead of 750 copies, at a rate proportionately in accordance with the decreased numbers, taking as a basis the figures mentioned in their tender per page, and for binding the same, forty-six cents per copy for such number of copies as in the opinion of the Secretary should be bound at the present time, and that if the demand be such that he require the whole issue to be bound at some future date, at the same rate.

Your Committee estimate that the following will be required for next year, and that the same be asked from the Provincial Government.

Spring Stallion show	$2,000 00
Fat Stock show	1,500 00
Printing Herd Books	1,050 00
Plowing matches	600 00
Council expenses	400 00
Total	$5,550 00
Exhibition of dairy cattle, dairy products and appliances	1,000 00
Total	$6,550 00

The said Dairy Exhibition to be held in eastern Ontario, as an equivalent to the Fat Stock Show at present held in western Ontario.

All of which is respectfully submitted.

(Signed,) R. McEWEN, Chairman.

GENERAL MEETING.

This meeting of the Association was held at the banquet given by the Fat Stock Club to the Agriculture and Arts, the Sheep and Swine Breeders' Associations, the judges, the Mayor of Guelph, the members for the county and other honored guests. The banquet was given at the Western hotel, J. McAteer, proprietor, and the room was filled to its utmost capacity.

Jas. Miller, Esq., president of the Fat Stock Club of Guelph, occupied the chair. On his right was Wm. Dawson, President of the Agriculture and Arts Association, and on his left Hon. John Dryden, Minister of Agriculture, while the rest of the council held conspicuous places at the head table.

After full justice was done to the good things at the table the intellectual part of the programme commenced by the Chairman calling on Mr. Dawson to read the annual address.

PRESIDENT'S ANNUAL ADDRESS.

GENTLEMEN,—It has been since 1846 a custom for the president of the Agriculture and Arts Association to deliver an address at what is called the annual meeting. In fulfilling this duty to-day I will not inflict upon you a long one, but will touch upon a few of the topics of interest to the farmers.

In the first place, I am justified in congratulating the farmers of Ontario upon a good harvest, although prices have not been what they should be.

This Association, which has had existence for forty-eight years, is an institution that has been the cradle of agriculture and arts in this province, and to it must be credited to a very great extent the prosperity which has been enjoyed by the farming community. It has also developed the importation of cattle and horses from the mother land, and, consequently, the improvement of all classes of stock in this province. This was done by degrees during the forty years in which they held, each year, a provincial exhibition in the fall of the year.

In 1889, after the Provincial was held in London, it was thought fit not to hold another large exhibition, as the different large societies had started associations of their own, and it was thought that they could do the work that had formerly been done by this Association. Besides holding very successful shows for forty-four years, and helping to educate the farmers of this province, this Association had saved enough in their palmy days to build the Agricultural Hall in which their offices are at present. This was erected in 1861, sixteen years after the inception of this Association, just thirty-three years ago, when Toronto was only a small place comparatively speaking. The property is now worth three times as much as it was when built.

The reason I mention this now is, that the rich province of Ontario now calls for more accomodation in the way of agricultural buildings, in which large shows can be held in the winter and spring months in a central place, like the city of Toronto, in which can be held horse and fat stock shows, with a seating capacity of say from 5,000 to 10,000 people. These shows are being held successfully in New York and Chicago, and could no doubt be made very successful here had we a proper building. This building could be used in a great many ways during the year, and would no doubt in a few years pay a good interest on the investment.

This Association has been holding for some years a successful stallion show in the old Drill Shed in Toronto, but it is so small and dismally cold that it is impossible to add any other features to it than a stallion show. In a large building all kinds of saddle and driving horses could be added, which would add immensely to the attractions and bring in a class of people that do not at present attend. The country is now ripe for this enterprise, and why, if the city of Toronto would provide us with a site, should we not sell our building, which is not large enough for anything but the present offices, and taking the amount realized from the sale of it, and a little help from the Provincial Government, put up a building adequate for all these purposes, and also contain the offices requisite for carrying on the present registration of live stock in it. It would be using our assets for a laudable purpose, and in the same line that this Association has always been working. With offices there our Secretary could look after the property and make the most of it. There is no doubt there would be many demands for such a building for sales, riding and training schools, and shows of many descriptions.

The work for the present year has consisted chiefly in the registration of animals. We have registers for Hackneys, Clydesdales and Shire horses; for Ayrshire, Devon, Hereford and Polled Angus cattle; for Berkshire, Yorkshire, Tamworth, Poland China, Chester White, Suffolks and Duroc-Jersey swine, and for Dorset Horned sheep.

We also held in the old Drill Shed in Toronto a spring stallion show, which was a great success. We gave premiums for thoroughbreds, carriage, standard bred roadsters, Hackneys, Clydesdales, Shires and Suffolk Punch horses, and paid out about $1,500 in prizes. The attendance was fairly good, but the building wholly inadequate for the show. It was the eighth annual horse show held under our auspices. These shows have been of great use to the country, as a means of sale, as an educating medium, and bringing horses to travel in different localities.

There have been three plowing matches held this year—one in the neighborhood of Cornwall, under the management of Messrs. McKinnon, Edwards and Legge; one out at Markham, under the control of J. C. Snell, W. J. Westington and W. B. Mallory, and one at Petrolia, under the management of A. Rawlings, R. McEwen and James Rowand. The fourth did not take place, as there was some misunderstanding as to the place of holding it, which was not rectified until it was too late. These matches were well attended, and the grants are anxiously enquired after by the different localities.

The present Fat Stock Show is another part of the work of this Association, and in conjunction with the Sheep and Swine Breeders' Associations and the Fat Stock Club of this city, is always looked forward to with great eagerness by the producers of live stock of this province. Judging from the amount of entries reported by our Secretary this has proved to be the most successful of the eleven fat stock shows held under the auspices of this Association.

It has been reported throughout the province that the usefulness of the Agricultural and Arts Association was gone, but with this I cannot agree. For several years past I have had an opportunity of seeing and taking part in the work it is doing, and I think that it compares favorably with the Highland Association of Scotland, which is now more successful than ever. (Applause).

Hon. John Dryden was then called for and was received with applause. He said:

Mr. President and Gentlemen,—I am glad to be permitted to enjoy once more the hospitality of the Guelph Fat Stock Club. Its members represent, I think, very fairly the good city of Guelph, and I have never visited a town or city which is more famous for the hospitality which it is ever ready to extend than is this city. I desire to express to you once more, therefore, my hearty thanks for your invitation to be with you on this occasion, and my sincere wishes for the future and permanent success of your club. The club deserves success, because of the enterprise which has already been manifested by its members, and the rink to day gives evidence of this enterprise by the way it has been fitted up for the present exhibition, the neatness of the arrangements of the stalls and pens and the sawdust-covered floors show that the members of the club are wide awake to the benefit derived by the city in having this show held each year in their midst.

I am not going to follow up the line taken by the President of the Agriculture and Arts Association, who has suggested that a new building should be erected in Toronto, as I am a little afraid that in this gathering, at least, the sentiment would not meet with unqualified approval (applause), but I do wish to say a few words about the present show. I think it is the best that has ever been held (applause), but I do not think you can give the sole credit to any one of the various associations which are interested in it. The Agriculture and Arts Association could not have done it so well alone; the Sheep Breeders' could not have done it, and I question very much if the Swine Breeders' could either; but its great success is due to the united efforts of all three of these associations. I am sorry I cannot congratulate you on weather, but I would ask you to remember that the weather bureau is not under the control of the Agricultural Department, which may be sufficient to account for this state of things. At the same time, though the attendance has consequently been smaller than we could have desired, there is the satisfaction of knowing that among those who were not prevented by the bad roads from being present, the interest taken in the exhibition has rather increased than lessened. There has been one event above all others which has cast a gloom over the pleasures of to-day; I refer to the news of the death, as has been flashed over the wires a few hours ago, of Sir John S. D. Thompson, Premier of our Dominion.

You all know that I have not agreed with the policy of his Government, but standing in the shadow of his untimely death there is no room in my heart for any other feeling than one of deep sadness at the calamity which has fallen upon the country to-day, and for the grief of the widow and children whom he has left behind. To think that the man occupying the most prominent position in the gift of his fellow-countrymen should have been stricken down in the height of his glory is unexpressively sad; he has been taken away from us in the acme of his power, and his death has saddened not only his personal friends and political allies, but the whole country. If it were not for this occurrence, I would say that you have had the most successful show in the history of your organization. We need such shows as this, especially in this district, which has become so famous for the quality of its live stock, and I believe that this animal exhibition has done more to keep alive the interests of the cattle-raising community than any other means that have ever been taken with that end in view. I can conscientiously promise you that at least one member of the Legislature will continue to favor the giving of a reasonable grant to assist in carrying out the work of this organization. (Great applause.)

Mayor SMITH, on being called upon, expressed his pleasure at being present, and especially under such pleasant auspices. He was glad to say it was not the first gathering of the kind he had attended. He had hoped that Mr. Dryden would have gone even farther than he did in his remarks, and would have said that Guelph was the proper place to hold the Fat Stock Show permanently, and that the Government would fit up a substantial building in which to hold it from year to year. The Guelph people had been glad to hear what Mr. Dryden had to say, and he would promise if the Agriculture and Arts Association and the Sheep and Swine Breeders' Associations, would gather together annually and hold their show in Guelph the citizens would do all they could to advance its interests. He was sure that the efforts put forth by the Fat Stock Club, and the fact that the Council of the city of Guelph was favorable to them, should be sufficient to cause them to obtain their object. He admitted that they might leave to Toronto the horse show, but they wanted Guelph to become the Smithfield of Canada by always having the fat stock show in its midst.

Mr. N. AWREY, M.P.P., after a few witty introductory remarks, said it must be admitted that this part of the province of Ontario did not take a back seat in the matter of stock, compared with any other section of the American continent, nor did their show compare unfavorably even with Chicago. He thought that the Agriculture and Arts Association, even if they only held a show once a year, deserved every encouragement. The money expended by them was well spent as far as the people of Ontario were concerned, and they would be quite willing to grant a very good sum for shows of this kind. The prizes should be sufficiently large to induce the best men in the country to exhibit. There were other exhibitions that should be given. He thought, for instance, they should have a dairy exhibit of dairy stock and utensils in the eastern part of the province. This interest has become an important one, and as the foundation of the country's prosperity is the agricultural interest, and he believed that the boast that the agricultural community was the backbone of the Dominion was true ; they were the people. (Applause.)

Both the Provincial and Dominion Governments had been doing good work in this respect, and he thought that both governments would be willing to do more for the agricultural interests if it could be shown that the objects were of value, and that no reasonable grant would be refused to the farmers of this country. (Applause) If the Patrons would only be as liberal as the Government had been there was no fear but what the grant for this dairy show could be obtained. He also referred eloquently to the death of Sir John Thompson, and in conclusion congratulated the members on the success of the exhibition, and hoped that it would continue to increase in size until it would outrival any exhibition of the same nature on the continent.

Ald. CRAWFORD, M.P.P., of Toronto, was the next gentleman called on, and said that it was certainly an unexpected pleasure to him to be able to express himself on this occasion. He was glad to be present at the dinner. He had been there on similar occasions in the past. He had always taken a very deep interest in the live stock business, and was pleased to be invited here as one of the judges, and thought that it was a nice idea to hold a banquet on such an occasion.

Turning to the subject of President Dawson's address, he said he would not in his remarks display as much policy as his friend the Minister of Agriculture. There was one thing in this address which he had noticed, and that was the reasoning from the financial standpoint. While he certainly considered that the people of Guelph deserved much credit for the hard work and the admirable display they had got up, yet he thought the address had shown that Toronto was the centre in which a fat stock show could be most successfully established, in which its financial success could be most permanently secured, if the Agriculture and Arts Association could put up a building as had been referred to, where farmers and stock raisers could gather together, and which could be used by them for sales and live stock meetings, as well as for fat stock and for horse shows, and the registration of stock and other matters pertaining to agriculture.

The President suggested that if the city of Toronto would set apart a site for this purpose, and make other concessions in the way of exemptions, they would be willing to sell their building on the corner of Queen and Yonge Streets, and that doubtless the Ontario Government might be persuaded to give a reasonable grant towards finishing such a building; he had no doubt that in a reasonable time such a building would be made to yield a fair interest on the investment. He himself was still in the city council, but did not intend remaining there after the end of the year; still he thought that arrangements could be entered into for the mutual co-operation of those bodies to erect such a building, and if so the new enterprise would not necessarily prevent the continuance of the Guelph show, as the more such shows were held the better for the live stock breeders of Ontario. (Applause.)

Mortimer Levering, of Lafayette, Ind., U.S., who was present acting as a judge on sheep, was called on and made a very happy speech, replete in witty remarks and appropriate anecdotes. He had attended many public dinners of different kinds, but for a good hospitable set of men he wished to be commended to a gathering of stock breeders. He desired to express his cordial thanks for the invitation which had been extended to him to be present to-night, and to speak out all his praise for the munificent hospitality which had been accorded to him during his visit to the city of Guelph. He saw that, judging from the remarks of a number of the previous speakers, that there was likely to be a division amongst them on the question of the location of their magnificent stock show, and he could whisper to his Guelph friends if they wanted any more assistance to send for him, and he would be right with them and settle the matter satisfactorily. He concluded by the following verse:

They talk of cities in the west,
And cities by the sea,
But this bright, busy town of Guelph
Is good enough for me.

Mr. Innes, M.P. for the county of Wellington, was the next speaker. He thanked Mr. Levering for his cordial advocacy of the city of Guelph, and assured him if they needed his services they would send for him at once. (Applause) In common with the Mayor he would express his gratification and pleasure at the success of the dinner, which was, he thought, the best of any they had ever held. He also considered this show the best of many held in Guelph, in spite of the unfavorable weather. He also touched on the death of Sir John Thompson, and hoped that in the future, as in the past, the Club would continue on its most successful career. (Applause.)

Jas. Rowand, M.P. for the county of North Bruce, and one of the members of the council, said that he as a farmer was very much interested in the success of the Provincial Fat Stock Show, and could not express his feelings too strongly regarding it. It was very discouraging to feel if one was working at a thing that it was retrograding. He was much encouraged by the success that had attended the present shows. It had been said by a previous speaker that upon the success of the agricultural interests of the country depended the prosperity of the whole community, and there was no doubt of the truth of the statement.

They had now to compete with the whole world in the articles they were producing, and they had to put up the best article in the market if they intended to succeed at all. (Applause). He saw around the table to-night men who had shown that they possessed the ability to compete with any set of men on the continent in their line, and it made him proud to feel that he himself was a farmer, and identified with the men who were at the present banquet. (Applause).

Major Mutrie, M.P.P. for the county was the next speaker. He said that he was much pleased to know that the show had been such a success; it was very encouraging, and he would say for the city of Guelph that it would always do its utmost to make it a big success. He hoped to see the Provincial Fat Stock Show permanently settled there; they know that the county of Wellington could not be surpassed in the matter of stock by any county in the province. He regretted that the majority of the farmers took no interest in the show; if they did they could make it a much greater success than at present. It was a great benefit to a community to have such a show held at their doors and everything possible should be done to encourage it. (Applause).

Jonathan Sissons, Vice-President of the Agriculture and Arts Association said he was glad to meet the people of Guelph, and glad to see that though every man present was not a farmer, yet they were all interested in the agricultural problems of the day. They certainly had much to be proud of and he thought the province of Ontario had also good reason to be proud of her position.

He did not believe there was a state in the Union as prosperous to-day as this province. He considered Guelph a good place to hold the Fat Stock Show in and thought the citizens deserved it, but he certainly thought they could not have a very successful one without the co-operation of the Agriculture and Arts Association. He could certainly truthfully say that they never held such a successful show as that of the present year. (Applause).

Mr. J. C. Snell also made a few remarks in laudation of the present show from an exhibition point of view, if not from a financial one.

The successful gathering then broke up.

JOINT MEETINGS OF THE STOCK SHOW COMMITTEE.

This committee is composed of representatives from the Agriculture and Arts Association, from the Sheep and Swine Breeders' Associations and the Fat Stock Show.

First meeting was held at 10 a.m. of Wednesday, the 12th of December.

J. C. Snell, Chairman, presided. The other members present were: Messrs. Rawlings, Sissons, Dawson, Miller, McCorkindale, McEwen, Coxworth, Brethour, Kelly, Legge, Gibson, Jackson and John I. Hobson.

A letter (dated November 29th, 1894) was read from F. W. Hodson, Secretary of the Sheep and Swine Breeders' Associations, saying that there appears to be some mistake in the appointment of judges at the last meeting of the Fat Stock Show Committee. Mr. DeCourcy, President of the Swine Breeders' Association writes me that the persons appointed were Jas. Main, Milton; Thos. Teasdale, Concord, with S. Coxworth, Claremont as reserve for Berkshires, Yorkshires and Poland Chinas; somehow the list was changed to read S. Coxworth, first; A. Elliot, Galt, second, with Mr. Teasdale as reserve judge. In selecting judges please govern yourself by the first list, as the second was printed in error.

The Secretary said that as the names of A. Elliott and Mr. Coxworth were printed on the prize list he could not pass them over, but had written for them to come as well as Mr. Main, so they had three lots of judges for swine, and as the exhibit was large they could be well used to advantage. He also said that his own notes showed that at the meeting spoken of in the letter Mr. Coxworth and Teasdale were the men appointed for the classes mentioned in the letter.

On motion of J. E. Brethour, seconded by R. Gibson, it was resolved, "That Messrs. Coxworth and Elliott judge classes 12, 13, 14 and 19, and that Messrs Main and Teasdale judge classes 17 and 18, and Messrs. Brethour and Featherston classes 15 and 16 as printed, and that Coxworth and Elliott judge sweepstakes."

The Secretary also said that Mr. W. S. Hawkshaw, of Glanworth, one of the judges on classes 9 and 10 was prevented by ill health from attending, so they would require another judge in his place.

On motion of R. Gibson, seconded by Jas Miller, Mr. Mortimer Lavering of Lafayette, Ind., who was in the city attending the Sheep Breeders' meeting, was appointed. Carried.

On motion of R. GIBSON, seconded by JOHN JACKSON, it was resolved, that Mr. Thos. Wilkinson be referee of short-woolled sheep.

On motion of A. RAWLINGS, seconded by Mr. JAS MILLER, it was resolved, that John Jackson be referee on long-wooled sheep.

It was also decided that two classes of sheep be called out at 10 a.m., Wednesday, and one class of swine, and the pure bred cattle at 2 p.m. It was ordered that the sheep and swine be all weighed.

The following protests were handed in by the Secretary. The first considered was sweepstakes cattle by Mr. Barber, as follows:

GUELPH, Dec. 12th, 1894.

Henry Wade, Esq., Secretary, Agriculture and Arts Association, Guelph.

DEAR SIR,—We hereby give you notice of protest against the decision of the judges in judging the cattle in (Class No. 7), championship prize for sweepstakes.

(1) Our reasons being that their judgment was plainly at fault, as their decisions were not joint in favor of the animal entitled to same.

(2) Your constitution has named six persons to act as judges and seven took part in awarding the prize.

(3) Also we claim that one of the judges was not eligible to act as same, and did not examine the cattle in question before the award was made.

(4) We claim that the prize was awarded to our animal; that three out of five of the judges gave same to us. The same was handed to our agent, and for some reason unknown was then taken back without our consent, which was wrong and against the constitution of the Association.

(5) After having five men to award the prize you had no right to add to the number.

Yours respectfully,
G. A. LEAMAN & Co.,
Per L. O. BARBER, Agent,
Halifax, N. S.

After hearing the explanation of A. Rawlings, chairman of the cattle committee, who said that in the first place the four judges that had been on the two classes could not agree they called in one referee, Mr. Miller; three of these gentlemen then decided to give the prize to the Leaman cow and one of them took the ribbon from the Secretary and placed it on this cow; the other two judges then protested that they were not consulted and objected to the decision. Mr. Rawlings then called in Mr. Simmons the other referee, in the meantime the Secretary took back the ribbon from the Leamen cow. The judges then stood three against three so Mr. Rawlings and some of the members of the committee called in De Warren Green as seventh man, and he decided in favor of the white steer belonging to Mr. Hay.

It was then moved by J. E. BRETHOUR, seconded by R. McEWEN and resolved, "That the decision of the judges be sustained in the case of the G. A. Leaman & Co. protest for the sweepstake premium, and that the protest be dismissed."

GUELPH, Dec. 12th, 1894.

Henry Wade, Esq:

I, the undersigned, hereby protest against the award of the judges in class 12 (Grant's Special), and request that the pigs awarded first prize be weighed, as provided by rule in clause 8.

Also I protest for the following reasons; overweight, heavy jowl, full crest and soft back.

GEO. NORTH, Marden.

This protest was sustained by the Board, and on motion of J. E. Brethour, seconded by John Kelly, it was resolved that all entries in class 19½ be weighed and J. Y. Ormsby was appointed to judge them.

Mr. J. E. Brethour, of Burford, then read the following letter which was not signed by the writer, but as it was followed up by a protest properly signed, it was read as well.

GUELPH, Dec. 12th, '94.

J. E. Brethour, Esq:

DEAR SIR,—I have reason to believe that the Chester sow, under eighteen months, is over that age, and also the barrow under nine months, is over the age stated in the catalogue. I have reference to the pigs shown by H. George & Sons.

Yours respectfully,
AN EXHIBITOR.

GUELPH, Dec., '94.

To the Directors of the Provincial Fat Stock Show:

GENTLEMEN,—I beg leave to enter a protest against the sow shown as Lady of the Lake 3, which is the property of Wm. Butler & Son, of Dereham Centre. This sow has been shown by H. George & Sons of Crampton as their property, and has also been falsely shown as one of their pigs, the property of their sow, Dora 4, in which section they were awarded first prize.

I beg to remain,
Yours respectfully,
WM. ROW.

Mr. Row also appeared in person and substantiated the charge, but said that as he was a neighbor he would like to see him get off easily, and in fact had withdrawn the protest, but was compelled by others to hand it in again. He said unfortunately it had been a common practice amongst exhibitors in former years; that the sow the Georges borrowed was owned by Wm. Butler, of Dereham Centre.

On motion of S. Coxworth, seconded by J. Legge, it was resolved that the Secretary notify Messrs. George and Butler to appear before this board at 2 o'clock p.m., to answer the charges made against them by this protest.. The meeting then adjourned until 2 o'clock p.m.

The same members were present at the 2 o'clock meeting; and Mr. J. C. Snell was in the chair.

Mr. George acknowedged before the meeting that the charge was true, that he had shown the Jersey red sow belonging to Mr. Wm. Butler as his own, and had been awarded the sweepstakes.

Mr. Brethour then explained that he had occasion to have grave suspicion that Mr. George had shown this sow as his for the sweepstakes, and again as one of three bred by the exhibitor; had taxed Mr. George with the facts; that he saw he was cornered and had to admit that he had done so.

Mr. George Green of Fairview asked that the Board take a lenient view of the case, and thought that the exposure would be sufficient to prevent them from doing the like again.

Mr. Row who made the protest also asked that they be dealt with leniently.

Mr. Wm. Butler, of Dereham Centre, was asked why he had loaned himself to this fraud, and why he had loaned them the sow. He said that Mr. George came to him to buy the sow in order to show her here, but he did not want to sell her; he then without knowing the seriousness of the matter, as he had never shown anything at a Provincial show, consented to loan him the sow, but he was very sorry that he had done so.

On motion of John I. Hobson, seconded by F. W. Hodson, it was resolved that after hearing the confession of Mr. George of the firm of H. George & Sons, of Crampton, that all the prizes awarded at this show to the firm of H. George & Sons be retained as a punishment for fraudulent entries, and in accordance with the Act No. 78, in the Agriculture and Arts Act, entitled, "Frauds at Exhibitions."

Mr. Geo. Green, of Fairview, then asked that the sweepstakes prize awarded to H. George & Sons be given to him, as he was the next on the list.

The council declined to do this.

Mr. F. W. Hodson, who had been absent, a short time returned and reported that he had good reasons to believe that Mr. Row, of Avon, had also made fraudulent entries, and asked that his prizes be also retained until the Swine Breeders' Association had time to investigate the matter.

This request was granted, and the Secretary was requested to retain his prize money until such investigation was made.

The meeting then adjourned.

TREASURER'S REPORT.

The Treasurer, in account with the Agriculture and Arts Association for the year ending December 31, 1894.

RECEIPTS.

	$ c.	$ c.
Balance from 1893		3,709 61
Registration fees		2,617 25
Herd books sold		239 50
300 Swine records		444 58
Legislation grant		4,600 00
Spring Horse Show:		
Entry fees	115 00	
Gate receipts	210 25	
Catalogues sold	20 00	
Shire Association, grant	20 00	
Clydesdale Association	250 00	
		615 25
Rentals:		
P. Jamieson	2,000 00	
F. H. Sefton	80 00	
		2,080 00
Interest on Prince of Wales mortgage		56 00
Fat Stock Show:		
Entry fees	469 25	
Gate receipts	169 95	
Shorthorn Association	25 00	
Ont. Agl. College, 1893	25 00	
Sheep Breeder's Association	500 00	
Swine Breeder's Association	500 00	1,689 20
Total receipts		16,051 39

DISBURSEMENTS.

	$ c.	$ c.
Fat Stock Show:		
Prizes	2,199 00	
Printing and advertising	250 42	
Ribbons	22 46	
Judges	80 00	
Band	20 00	
Superintendent and men	38 00	
Assistance and hotel expenses	46 25	
Sheep Breeders' fees return'd	131 00	
Swine Breeders' fees return'd	97 00	
Guelph Fat Stock Club fees	25 00	
Swine Breeders' proportion of prize money returned	109 00	
		3,018 13
Spring Horse Show:		
Prizes	1,342 00	
Gold and silver medals	58 00	
Printing and advertising	282 72	
Ribbons	17 13	
Judges	76 70	
Sawdust and sand	19 00	
Clerks and labor	30 50	
Cab hire	2 00	
		1,828 05
Herd Books:		
Mail Job Printing Co	95 75	
Vol. 3, Swine Record	610 00	
Vol. 4, Swine Record	641 72	
Vol. 2, Ayrshire Book	419 75	
Dominion Govt., copyright	16 50	
Binding	2 00	
		1,785 72
Interest on mortgage		600 00
Library books		28 61
Directories		12 50
Salaries:		
Henry Wade, Secretary	1,500 00	
A. S. McVity, Clerk	150 00	
W. F. Stewart. Clerk	510 00	
J. W. Nimmo, Stenographer	495 00	
George Graham, Treasurer	100 00	
J. Sissons, Treasurer	25 00	
Charwoman	96 00	
Hobson & Dickie, Auditors	30 00	
Messenger and caretaker	18 00	
		2,924 00
Office expenses:		
Rent of telephone	45 00	
Consumers' Gas Co	19 75	
Gas heater	9 00	
Water rates	8 88	
Book case	6 00	
Repairing typewriter	8 75	
Ribbons and letter files	7 50	
Advertising	1 36	
		106 24
Heating allowed P. Jamieson		100 00
Council and Committees:		
Meeting *re* Horse Show	65 04	
Annual meeting, March	258 48	
Meeting *re* Fat Stock Show	82 66	
September meeting	169 82	
Meeting at Brampton	7 90	
December meeting	254 32	
		838 22
Delegates' expenses:		
N. Awrey, Farmers' Inst.	15 20	
Wm. Dawson, Vet. School	16 00	
R. McEwen, Horse Show.	14 16	
J. Sissons, Toronto meeting	6 50	
		51 86
Insurance		98 75
Legal expenses *re* R. Brown		9 80
Printing and Stationery		113 10
Veterinary College expenses:		
Diplomas	92 00	
Medals	9 00	
		101 00
Building repairs:		
Papering and glazing	38 90	
Plumbing	55 00	
Carpenter work	36 49	
Repairs	6 00	
		136 39
Plowing matches in three divisions		450 00
Postage		401 13
Hobson & Dickie, extra audit		13 65
H. Wade, travelling expenses		18 20
Reporting annual meeting		10 00
Miscellaneous		31 71
Total disbursement		12,677 06
Balance on hand		3,374 33

ASSETS.

	$ c.
To cash in bank	3,374 33
Real estate	60,000 00
Library	1,500 00
Prince of Wales fund	800 00
Office furniture and safe	600 00
Breeder's Herd books	3,000 00
Total assets	69,274 33

LIABILITIES.

Mortgage on Real Estate	10,000 00

AUDITOR'S REPORT.

To the Council of the Agriculture and Arts Association :

Gentlemen,—We, your Auditors, beg leave to report that we have examined the Treasurer's books and accounts and find vouchers for the disbursements correct, all of which is respectfully submitted.

John I. Hobson, }
Wm. Dickie, } Auditors.

Toronto, January, 1895.

ONTARIO VETERINARY COLLEGE.

The annual closing exercises of the Ontario Veterinary College, Temperance Street, were held on March 24th, 1894, in the Lecture Theatre. Professor Andrew Smith, the worthy Principal, who for the past thirty years and more has so successfully conducted the institution, presided, and was supported on the platform by the following gentlemen : Mayor Kennedy ; Rev. Principal Caven, D.D. ; J. J. Withrow, President Toronto Industrial Exhibition Association ; John Millar, Deputy Minister of Education ; J. L. Hughes, Public School Inspector ; Dr. Thorburn ; Dr. J. T. Duncan ; Dr. C. H. Sweetapple ; H. J. Hill, Manager Industrial Association ; Henry Wade, Secretary Agriculture and Arts Association of Ontario ; Rev. C. Campbell ; William Cowan, Galt ; Wm. Burns, President Ontario Veterinary Association ; John Akers and others.

The proceedings opened with a few words of welcome from the Chairman, who spoke in most gratifying terms of the continued success of the college, after which a letter of apology for enforced absence was read from the Lieutenant-Governor, who was prevented from being present through domestic bereavement.

The prizes and diplomas were then distributed.

LIST OF GRADUATES.

The following is a complete list of the Graduates of the Ontario Veterinary College, for the session of 1893-94 ·

Graduated March 24th, 1894.

Alton, Andrew L	Oakville, Ont.
Armstrong, W. W	Cortland, N.Y.
Baker, Arthur W	Cortland, N.Y.
Babcock, Henry C	College Springs, Iowa.
Bailey. Claude	Rosemonte, Ont.
Barradell, Alfred	Kettleby, Ont.
Beechy, Levi P	Berlin, Ohio.
Behner, C. F	Grand View, Ill.
Bell, Wm. R	St. Louis, Mich.
Bishop, Lincoln L	Delavan, N.Y.
Black, Judson	Yale, Mich.
Blackwell, John C	Centralia, Wash.
Bock, Harry P	New Ringold, Pa.
Bonesteel, D. A	Frankford.
Britton, E. G	Guys Mills, Pa.
Burns, Thos	Croghan, N.Y.
Butters, Jos	Motherwell, Ont.
Battin, Andrew J	Shunk, Pa.
Bradley, Samuel A	Louisville, Ky.
Campbell, Archibald B	Toronto, Ont.
Colthurst, Richard	Cork, Ireland.
Connell, Clare V	Wauseon, Ohio.
Crail, James	Tipton, Ind.
Cunningham, John T	Woonsocket, R. I.
Curtiss, Chas. F	Parker, S. D.
Cline, John F	Glenboro', Man.
Dade, John T	Hutchinson, Kan.
Detar, C. M	Fryburg, Pa.
Dingman, Richard G	Portland, Oregon.
Doss, Wilber C	Pittsfield, Ill.
Douglas, Jas. M	Dundee, Scotland
Douglas, Jos. M	Hendrum, Minn.
Drasky, J. J	Wilber, Neb.
Dunham, J. W	Owatonna, Minn.
Deitrich, I. S	Hamburg, Pa.
Ebner, Chas. F	Ipswich, S. D.
Falconer, Thos	Grandin, N. D.
Fenton, Robt. O	Kingsley, Iowa
Fisher, B	Creston, Iowa.
Fitchett, Geo	Pinnebog, Mich.
Fitzsimmons, John F	Danbury, Conn.
Fortune, Andrew G	Vesta, Ont.
Foust, Fred. L	Defiance, Ohio.
Fowler, Frank	Plum Creek, Man.
Fullarton, Wm. R	Dubuque, Iowa.
Fetherolf, George R	Mahanoy City, Pa.
Gates, George S	Oneida, Ill.
Gebhardt, Otto H	Alpena, Mich.
Gleason, E. D	Carlinville, Ill.
Good, Jos. M	Greenwood, Miss.
Gregg, Wm. F. C	Barrie, Ont.
Glasgow, Wm. J	Springfield, Mass.

Harsh, Francis A.	Augusta, Ohio.
Heighway, E. W.	London, Ont.
Hinman, Albert W.	Braddock, Pa.
Hitch, Thos. S	Griggsville, Ill.
Howie, John	Barnett, Ont.
Heyde, Wm. F	St. Louis, Mo.
Hunter, W. R	Juncan, Wis.
Johnson, Peter I.	Marion, N. Y.
Jones, Geo. B	Nevins, Ill.
Jones, T. D	Avoca, Pa.
Joyce, Jas. S	Mansewood, Ont.
Kistler, Amandus H	Andrews, Pa.
Kline, Albert J	Ridgeville Corners, Ohio.
Knoll, W. L. P	Montrose, Pa.
Kleider, Wm. E	Wadsworth, Ohio.
Laidlaw, John E	Glenworth, Ont.
Lane, L. Sheriman	Harrisburg, Ohio.
Lathrop, Walter E	Bad Axe, Mich.
McColl, D. J.	Lucan, Ont.
McConnell, Alex	Jarvis, Ont.
McCrae, W. W.	Steubenville, Ohio.
McElroy, John T	Concord, Ont.
McGillicuddy, John	Watford, Ont.
McGuffin, John G	London, Ont.
McCollum, P. L	Lewiston, N. Y.
Marshall, R. J	Brandon, Man.
Martin, Chas. H	Buffalo, N. D.
Martin, H. M	Townshend, Vt.
Martin, W. E.	Perry, Mo.
Monteith, Robt. E	Killarney, Man.
Morgan, Norman	Strathroy, Ont.
Muecke, Henry H	Sioux City, Iowa.
Mollance, Robert	Kirkcudbright, Scotland.
Murphy, A. C	Sydney, C .B.
Murray, Sylvester J	Medo, Minn.
Musselman, S. F.	Cynthiana, Ky.
Myer, Elisha	Ottawa, Ill.
Myers, Horace A	Lodi, Ohio.
Myers, Sydeny D.	Wooster, Ohio.
Molyneaux, W. M	Forksville, Pa.
Neville, John	Decatur, Mich.
Nicholson, James	Edinburgh, Scotland.
Nighbert, E. M.	Palmyra, Ill.
Orr, Wm. C	Dillon, Montana.
Penfold, John H.	Tweedside, Ont.
Price, Jas. W.	Reynoldsburg, Ohio.
Rasberry, Sydney J	Hamilton, Ont.
Richardson, Wm. H	Watford, Ont.
Robb, Robert	Newman, Ill.
Robertson, Jas. E	West Union, Iowa.
Robinson, Harvey W	Guilford, Ind.
Rogers, Z. L.	East Palestine, Ohio.
Rolles, Richard C	Maryborough, Ont.
Rombough, M. B.	Morden, Man.
Ross, James D.	Port Dover, Ont.
Rowe, Henry J	Sandusky, Ohio.
Rooks, Wm. J	Holland, Mich.
Sallade, J. G.	New Ringgold, Pa.
Sankey, Chas. A.	Boissevain, Man.
Seale, Walter A.	Granby, Que.
Shields, W. J	Lake Talon, Ont.
Shuttleworth, Ernest H	Beaconsfield, Iowa.
Smith, John A	Ivan, Ont.
Smith, Wade H	Pleasant Corners, Ohio.
Smith, Wm. H	Morden, Man.
Snively, J. R	Lanark, Ill.
Stearns, O. F	Windham, Vt.
Stevens, Jas C	DeRuyter, N.Y.
Sunderlin, E. W	Auburn, N.Y.
Taggart, Francis	Wilsonville, Ont.
Tibbals, F. Evans	Somerset, Ky.
Turnbull, Robert	Danville, Ill.
Turner, H. A	Syracuse, N.Y.
Van Luven, Adam R	Cape Vincent, N.Y.
Walrod, Geo. M	Lake View, Iowa.
Walsh, F. A	Kingston, Ont.
Ward, S. Hay	Clandeboye, Man.
Webber, Le Roy	Rochester, N.Y.
Whaley, H. F	San Francisco, Cal.
Whitehouse, Arthur W	Laramic, Wyoming.
Whitworth, E. J	Lynedoch, Ont.
Willis, Robert J	Brampton, Ont.
Widmeyer, Chas. L	Gretna, Man.
Wagoner, C. Otto	Arkon, Ohio.
Wilkinson, W. H	Almonte, Mich.
Welch, John W	Toronto, Ont.

GRADUATED DECEMBER 21ST, 1894.

Ball, Nelson	Auburn, Ont.
Coleman, David H	Philadelphia, Pa.
Cunningham, Robert	Thorndale, Ont.
Dunn, George H	Erie, Pa.
Elliott, John T	Uxbridge, Ont.
Engel, John H	Milverton, Ont.
Friedheim, Louis	Rock Hill, S. C.
Funston, Wm. H	Toronto.
Harrison, G. W	Souris, Man.
Hisey, Dan	Creemore, Ont.
Irvine, John D	Dalkeith, Ont.
Jamison, Geo	North Bay, Ont.
Keithline, John T	Jenningsville, Pa.
McAfee, Robt. A	Aylwin, Que.
Macdonald, John H	Wiarton, Ont.
Sawyer, S. Gordon	Boston, Mass.
Snider, J. Herbert	Guelph, Ont.
Swenerton, Wilson	Wawanesa, Man.
Tomlinson, Benjamin	Clinton, Ont.
Whybra, Farnell	Niagara Falls South, Ont.

EIGHTH ANNUAL SPRING STALLION SHOW, 1894.

The following is the result of the Eighth Annual Stallion Show, held at the Drill Shed, Toronto, on March 28th and 29th, 1894, under the management of the Agriculture and Arts Association, the Clydesdale Horse, Shire Horse and Hackney Horse Associations:

LIST OF PRIZES AWARDED.

THOROUGHBRED.

STALLIONS FOALED PREVIOUS TO JANUARY 1ST, 1891.

1st prize, $50; 2nd prize, $35: 3rd prize, $25: 4th prize, $15; 5th prize, highly commended; 6th prize, commended.

Judges.—Wm. Hendrie. Hamilton, Ont.; A. Wilson, Paris, Ont.; Andrew Smith, V.S., Toronto, Ont.

1st, Kidd Bros., Listowel, Ont., "Ten Broeck, Jr."; chestnut; foaled in 1885; sire, Ten Broeck; dam, Molly McCann, by Hunter's Lexington, etc.

2nd, Brown & Gilkinson, Brampton, Ont., "Woodburn" (Vol. 5, Bruce); bay, foaled in May, 1886; bred by Mr. Alexander, Woodburn Park, Ky., U.S.; sire, King Alfonzo; dam, Molly Wood, by Lexington, etc.

3rd, Peter & Alex. Holmes, Beechville, Ont., "Pillarist" (imp.); dark brown; foaled in 1885; bred by W. S. Martin, England; sire, Trappist; dam, Philomela, by King of the Forest, etc.

4th, Joseph Duggan, Toronto, Ont., "The Chicken" (297); bay, foaled in 1882; bred by James Nolan, Belfast, Ireland; sire, Billy Pitt; dam, Pheasant, by Gamekeeper, etc.

5th, J. W. Murray, Toronto, Ont., "June Day"; brown, small star on face; foaled in 1887; bred by A. J. Alexander, Woodburn Station, Ky., U.S.; sire, Falsetto; dam, Virga, by Virgil, etc.

6th, Percy & Young, Bowmanville, Ont., "Trick"; chestnut, left hind foot white; foaled 1886; bred by E. G. Archer, Mediapolis, Iowa, U.S.; sire, Lead On; dam, Banetta, by King Ban (imp.), etc.

SWEEPSTEAKES, GIVEN BY THE AGRICULTURE AND ARTS ASSOCIATION, FOR THE BEST THOROUGHBRED STALLION OF ANY AGE, QUALIFIED TO IMPROVE THE BREED OF SADDLE HORSES AND HUNTERS; $20.

Kidd Bros., Listowel, Ont., "Ten Broeck, Jr." See above.

CARRIAGE OR COACH.

STALLIONS FOALED PREVIOUS TO JANUARY 1ST, 1891.

1st prize, $50; 2nd prize, $35; 3rd prize, $25; 4th prize, $15; 5th prize, highly commended; 6th prize, commended.

Judges.—A. A. Choate, Port Hope, Ont.; M. Plank, V.S., Uxbridge, Ont.

1st, Thomas Irving, Winchester, Ont., "Prince Arthur" (imp.), 1852; bay; foaled in 1889; bred by Henry Watson, Bampton, York, Eng;; sire, Prince Victor, 376; dam, Countess of Wilton, 26, by Fedius Dius, 1592, etc.

2nd, Milton German Coach Horse Co., Milton, Ont., "Picador" (imp.) (Ger.) 1611 (Am.) 791; dark bay; foaled May, 1890; bred by R. Kuckens, Ollin bei Berne, Germany; sire, Ardo, 1000 G.; dam, Piquedame, 944 G., by Emigrant, etc.

3rd, Robert Ness, Howick, Que., "Maltot," 1524 Am.; sire, Domino Noir; dam, Moassiline, by Fidele au Maleur, etc.

4th, Robert Ness, Howick, Que., "Busnel"; sire, Extra; dam, Parfaite, by Cometable, etc.

5th, Thos. Irving, Winchester, Ont., "Ingmanthorpe Forester II." (imp.), 1768; brown; foaled in 1889; bred by Ben Smith, Dunsforth, Broughbridge, England; imported in 1892 by exhibitor; sire, Baron Rothsay, 981; dam, Jessie, by Spendthrift, etc.

6th, A. C. McMillan, Erin, Ont., "Shining Light," 1178; foaled June 10th, 1885; bred by Luke Dale, Atterington, Eng.; sire, Wonderful Boy, 534; dam by Herod, 218, etc.

STALLIONS FOALED SUBSEQUENT AND ON JANUARY 1ST, 1891.

1st, C. N. Blanshard, V.S., Appleby, Ont., "Terrington Boy" (imp.); foaled in 1891; sire, Inkerman (236); dam ———— by Herod (218), etc.

SWEEPSTAKES, GIVEN BY AGRICULTURE AND ARTS ASSOCIATION FOR BEST COACH STALLION OF ANY AGE; $20.

Thos. Irving, Winchester, Ont., "Prince Arthur" (imp.), 1852. See above.

STANDARD BRED ROADSTER.

Stallions Foaled Previous to January 1st, 1891.

1st prize, $30; 2nd prize, $25; 3rd prize, $15; 4th prize, $10; 5th prize, highly commended 6th prize, commended.

Judges.—Jas. Walker, Clearwater, Mich., U.S.; M. Plank, V.S., Uxbridge, Ont.

1st, Graham Bros., Claremont, Ont., "No. 12, Deacon," 17380, brown, foaled June, 1887; bred by Huntley & Clark, Tuston, Montana, U.S.; sire, Bishop, 1688; dam, Lady Graves, by Smuggler, 927, etc.

2nd, Kidd Bros., Listowel, Ont., "Oliver Wilkes," 10647 bay, off hind foot white; foaled June, 1886; bred by C. F. Emery, Cleveland, Ohio, U.S.; sire, Brown Wilkes, 2040; dam, Bessie Turner, by Virginius, etc.

3rd, Robt. Porteous, Simcoe, Ont., "The Wasser," 7733; bay, foaled in 1884; bred by Col. E. W. Conover, Redbank, N.J., U.S.; sire, Gen. Washington, 1161; dam, Kate Taylor, by Aberdeen, 27, etc.

4th, Thomas Lee, Toronto, "Sim Watson, Jr.," 23451; black, foaled 1888; bred by Jas. Brown, Woodbridge, Ont; sire, Sim Watson; dam, Fanny Brown, etc.

5th, William A. McBride, Toronto, "Willie Douglas," 12747; foaled May, 1888; bred by F. N. Lawrence, Bayside, Long Island; sire, Alcantara, 729; dam, Nora, by Walkill Chief, 12746, etc.

6th, George E. Hughes, Charlottetown, P.E.I., "Physician," 7319; rich golden bay; sire, Edward Everett, 81; dam, Dolly Varden, by Eclipse (imp.), etc.

Stallions Foaled Subsequent and on January 1st, 1891.

1st prize, $30; 2nd prize, $20; 3rd prize, $10; 4th prize, $5; 5th prize, highly commended; 6th prize, commended.

1st, H. E. McCully, Toronto, "Altoneer," 17493; bay, foaled in May, 1891; bred by exhibitor; sire, Sphinx; dam, Pilomia Wilkes, by Pilot Wilkes, etc.

2nd, George Jackson & Son, Downsview, Ont., "Sylviego," 24875; bay, black points; foaled in April, 1892; bred by McFerran & Clancy, Foundation Stud, Ky., U.S.; sire, Egotist; dam, Sylvia, by Stranger, etc.

3rd, Fisher & Co., Harriston, Ont., "Karon," 16951; bay; foaled 1891; bred by H. C. Jewett & Co., Jewettsville, N.Y., U.S.; sire, Damo (4366), dam, Argalia, by Rochester, etc.

4th, Morris, Stone & Wellington, Welland, Ont., "Pelham Boy," 21740; foaled in 1891; bred by exhibitors; sire, Frank Ellis, 7397; dam, Maud, by General Stanton, etc.

Sweepstakes, for Best Standard Bred Roadster Stallion, any Age, Given by the Ontario Association of Trotting and Pacing Horses.

Gold Medal.

Graham Bros., Claremont, Ont., "Deacon," 17380. See above.

HACKNEY.

Stallion Foaled Previous to January 1st, 1891.

1st prize, $50; second prize, $35; 3rd prize, $25; 4th prize, $15; 5th prize, highly commended; 6th prize, commended.

Judges.—John Gibson, Denfield, Ont.; J. F. Quinn, Brampton, Ont.

1st, R. Beith & Co., Bowmanville, "Ottawa" (imp.),—2—; chestnut; foaled in 1890; bred by Wm. Martin, Scoreby Grange, York, Eng.; imported in dam, February, 1890, by Robt. Kerr, Reaburn, Man.; sire, Lord Derwent II, (1034); dam, May Flower (imp.)—2—(767), by Highflyer, (1648), etc.

2nd, Graham Bros., Claremont, Ont., "Kilnwick Fireaway" (imp.)—5—(3968); bay, foaled in 1890; bred by John T. Elgey, Kilnwick, Pocklington, Eng.; sir, Lord Swanland, (1834); dam, Trip, by Tripaway, (2296), etc.

3rd, R. Beith & Co., Bowmanville, "Jubilee Chief" (imp.)—1—108 (2122); dark brown, four white feet; foaled in 1887; bred by Wm. Martin, Scoreby Grange Gate, Helmsley, York, Eng.; imported February, 1890, by Robt. Kerr, Reaburn, Man.; sire, Pilot, (1323); dam, Queen of the Forest, (297), by Fireaway, (249), etc.

4th, D. & O. Sorby, Guelph, Ont., "Square Shot," (27); chestnut, foaled in 1889; bred by James Griggs, Leicester Square, Fakenham, Norfolk, Eng.; sire, Great Shot II, (1490); dam, Myrtle, (256), by Tallyrand, 823, etc.

5th, H. N. Crossley, Rosseau, "Fireworks" (imp.)—16—(3602); brown, foaled in 1891; bred by James Scott, Clayfield, Pocklington, Yorkshire, Eng.; imported in 1893 by exhibitor; sire, Wildfire, (1224); dam, Pretty Poll, (4574), by Superior, (1410). etc.

6th, Crouch & Son, Lafayette, Ind., U.S., "The Duke" (imp.)—16—(2039), bay, foaled 1885; bred by James Croker, Beetley Hall, East Durham, Norfolk, Eng.; imported in 1889 by J. H. Treeman & Sons, Bushnell, Ill., U.S.; sire, Highflyer, (1006); dam, Black Bess, (32), by Perfection, (541), etc.

Stallions Foaled in 1891.

1st prize, $40; 2nd prize, $30; 3rd prize, $20; 4th prize, $10; 5th prize, highly commended; 6th prize, commended.

1st, G. H. Hastings, Deer Park, Ont., "Star of Mepal II. (imp.)—29—(Vol. 10); chestnut, foaled in 1891; bred by R. Beldam, Witchford. Ely, Eng.; imported by exhibitor; sire, Star of Mepal, (1920); dam, Queen of Denmark, (4610), by Telegraph, (826), etc.

2nd, G. H. Hastings, Deer Park, Ont., "Black Nobleman—18—; dark brown, foaled June, 1891; bred by exhibitor; sire, Young Nobleman (imp.)—30—(2328); dam, Norfolk Duchess (imp.)—12—, by Fireaway, etc.

Stallions Foaled Subsequent and on January 1st, 1892.

1st prize, $25; 2nd prize, $15; 3rd prize, $10; 4th prize, highly commended; 5th prize, commended.

1st, R. Beith & Co., Bowmanville, Ont., "Banquo"—3—; dark bay, star and four white feet; foaled June, 1892; bred by exhibitor; sire, Jubilee Chief (imp.)—1—(2122); dam, Mona (imp.)—4—, by Dictator, (1471), etc.

2nd, R. Beith & Co., Bowmanville, Ont., "Lord Rosebery II"—4—; brown, white off fore foot; foaled in April, 1892; bred by exhibitors; sire, Jubilee Chief—1—(2122); dam, Florence—3—(661), by Randolph, (1123), etc.

3rd, G. H. Hastings, Deer Park, Toronto, Ont., "Little Nobleman—31—; bay; foaled 1892: bred by exhibitor; sire, Young Nobleman—30—(2328); dam, Norfolk Duchess—12—(2355), by Fireaway, (267), etc.

Sweepstakes, Best Hackney Stallion Any Age, Prince of Wales' Prize, given by the Agriculture and Arts Association; $40.

R. Beith & Co., Bowmanville, Ont., "Ottawa, (imp.)—2—. See above.

Suffolk Punch Stallion of Any Age.

1st prize, $25; 2nd prize, $15; 3rd prize, $10; 4th prize, highly commended; 5th prize, commended.

1st, J. H. Storey, Winchester, Ont., "Captain Williams," (1993), chestnut; foaled April 4th, 1888; bred by David Christie, Winchester, Ont.; sire, Checkmate, (1556); dam, Smart, (1476), by Gerrett's Cupbearer, (566), etc.

SHIRE.

Stallions, Foaled Previous to January 1st, 1891.

1st prize, $40; 2nd prize, $30; 3rd prize, $20; 4th prize, $10; 5th prize, highly commended; 6th prize, commended.

Judges.—John Boag, Ravenshoe, Ont.; Richard Gibson, Delaware, Ont.

1st, Morris, Stone & Wellington, Welland, Ont., "Pride of Hatfield" (imp.) [256]; bay, stripe on face and three white legs; foaled in 1890; bred by George Smales, Gowdall, Selby, Yorkshire, Eng.; imported in 1894 by exhibitors; sire, Lincolnshire Lad 2nd (1365); dam, Flower, by Gay Lad, etc.

2nd, Jas. Gardhouse & Son, Highfield, Ont., "Garfield II" (imp.) [138] (2786); bay, three white heels and face; foaled, 1881; bred by T. Gornell, Preston, Lancashire, Eng,; sire, What's Wanted (2332); dam, Darby, by Paragon, etc.

3rd, Morris, Stone & Wellington, Welland, Ont., "Prince Charles" [196]; bay, white stripe on face, left front and hind feet white; foaled, 1888; bred by exhibitors; sire, Carbon (3523); dam, Lancashire Lass, by Honest Tom, etc.

4th, Horace N. Crossley, Rosseau, "Headon Banneret" (imp.) [224] (9227); dark bay, star on face, hind feet white; foaled in 1888; bred by John Semper, Hardwich, Lincoln, Eng.; imported March, 1891, by exhibitor; sire, Lincoln II (2725); dam, mare by Garibaldi (911), etc.

5th, Geo. Garbutt, Thistletown, Ont., "Blagdon Marquis" (imp.) [253] (12800); bay; foaled, 1889; bred by James Blyth, Woodhouse, Stanstead, Essex, Eng.; sire, Real Briton (4641); dam, Mistress, by Pride of Leighton II. (1771), etc.

STALLIONS, FOALED SUBSEQUENT AND ON JANUARY 1ST, 1892.

1st prize, $25 ; 2nd prize, $20 ; 3rd prize, $15 ; 4th prize, highly commended ; 5th prize, commended.

1st, Jas. Gardhouse & Son, Highfield, Ont., "Duke of Blagdon" (imp.) [257] ; bay, dark points ; foaled, 1892 ; bred by Clement Keevil, New Malden, Surrey, Eng. ; imported 1893, by exhibitor ; sire, Blagdon Lincoln (12797) ; dam, Blagdon Brunette, by Lincolnshire Lad 2nd, etc,

2nd, Morris, Stone & Wellington, Welland, Ont., "Frederick William" [246] ; bay, star on face, off fore foot white and white on hind legs ; foaled, 1892 ; bred by exhibitors ; sire, Prince Charles [196] ; dam, Elsie Morin (imp.), by Welton Tom (3395), etc.

SWEEPSTAKES.—BEST SHIRE STALLION, ANY AGE, GIVEN BY THE SHIRE HORSE ASSOCIATION OF CANADA. $20.00.

Morris, Stone & Wellington, Welland, "Pride of Hatfield" (imp.) [256]. See above.

CLYDESDALE.

STALLION, FOALED PREVIOUS TO JANUARY 1ST, 1891.

1st prize, $50 ; 2nd prize, $35 ; 3rd prize, $25 ; 4th prize, $15 ; 5th prize, $10 ; 6th prize, very highly commended ; 7th prize, highly commended ; 8th prize, commended.

Judges.—John Duff, Rockwood, Ont. ; Arthur Johnston, Greenwood, Ont., and R. Beith, Bowmanville, Ontario.

1st, D. & O. Sorby, Guelph, Ont., "Grandeur" (imp.) [1724] (6814) ; brown, spot on forehead, white hind foot ; foaled, 1887 ; bred by Wm. Hunter, Garthland Mains, Stranraer, Scot. ; sire, Darnley (222) ; dam, Trim of Garthland (4699), by Farmer (286) etc.

2nd, Graham Bros., Claremont, Ont., "Queens Own" (imp.) [1708] (7176) ; dark bay, stripe on face, nigh hind foot white, tip on off fore foot ; foaled, May, 1886 ; bred by Wm. Craig, Buchley, Maryhill, Scot. ; imported 1891, by exhibitors ; sire, Prince of Wales (673) ; dam, Buchley Kate (1142), by Paisley Jock (581), etc.

3rd, Robert Ness, Howick, Que., "Lawrence Again" (imp.) [2047] (7909) ; bay, ratch on face, hind pasterns white ; foaled, 1888 ; bred by Wm. Watson, Boddin, Montrose, Scot. ; sire, Prince Lawrence ; dam, Rosy of Balhall (3153). by Lord Lyon (489), etc.

4th, T. W. Evans, Yelverton, Ont., "Craichmore Darnley" (imp.) [2127] (5667) ; bay, four white legs, white face ; foaled April, 1886 ; bred by Wm. McMaster, Challoch, Wigbourshire, Scot. ; imported in 1893 by exhibitor ; sire, Darnley (222) ; dam, Flora (843), by Druid (1120), etc.

5th, John Davidson, Ashburn, Ont., "Tofty" (imp.) [2123] (9452) ; bay, star on face, legs black ; foaled May, 1890 ; bred by S. Campbell, Jr., Tofthills, Kintore, Scot. ; imported 1891, by John Isaac, Markham, Ont. ; sire, Botanist (4872) ; dam, Belinda (7048), by George Turk (1148), etc.

6th, Jas. H. Wilson, Lifford, Ont., "Lewie Gordon" (imp) [1602] (7918) ; brown, blaze on face, hind feet white, near fore leg white ; foaled May 17th, 1888 ; bred by Thos. Garland, Ardlethan, Ellon, Scot. ; imported in 1889 by D. & O. Sorby, Guelph, Ont ; sire, MacCamon (3818) ; dam, Kate of Ardlethan (4629), by Earl of Buchan (1126), etc.

7th, Alex. Cameron, Woodstock, Ont., "Tannahill" (imp.) (4745) ; brown, white face and four white feet ; foaled May, 1884 ; bred by John Cassie, Westerton, Aberdeenshire, Scot. ; imported by Robert Beith, Bowmanville, Ont. ; sire, Lord Erskine (1744) ; dam, Bloom (1088), by British Empire (1599), etc.

8th, T. W. Evans, Yelverton, Ont., "Uamvar" (imp.) [2129] (9457) ; bay, ratch on face, hind pasterns white ; foaled 1890 ; bred by A. Muirhead, Drumquhassle, Sterlingshire, Scot. ; imported, 1893, by exhibitor ; sire, Lord Ailsa (5974) ; dam, Young Maggie, by Topsman, etc.

STALLIONS FOALED IN 1891.

1st prize, $40 ; 2nd prize, $30 ; 3rd prize, $20 ; 4th prize, $10 ; 5th prize, $5 ; 6th prize, very highly commended ; 7th prize, highly commended ; 8th prize, commended.

Peter and Alex. Holmes, Beechville, Ont., "Millrigg Stamp" (imp.) [2122] (9617) ; brown, stripe on face, spot on belly, white feet ; foaled 1891 ; bred by John Wilson, Millrigg, Skelmorlie, Scot. ; imported by exhibitors ; sire, MacNeil (4566) ; dam, Maggie of the Flat (4274), by Prince of Wales (666), etc.

STALLIONS FOALED SUBSEQUENT AND ON JANUARY 1ST, 1892.

1st prize, $30 ; 2nd prize, $20 ; 3rd prize, $15 ; 4th prize, $10 ; 5th prize, very highly commended ; 6th prize, highly commended ; 7th prize, commended.

S. J. Prouse, Ingersoll, Ont., "Roslin" (imp.) [2124] (9839) ; bay, white ratch on face, little white on near fore foot and off hind leg ; foaled May, 1892 ; bred by William Mackie, Colston, Bishopbriggs, Scot. ; imported 1893, by exhibitor ; sire, Rosedale (8194) ; dam, Mary of Finnich (6453). by Pride of Endrick (3069), etc.

Sweepstakes.—Best Clydesdale Stallion, any Age, given by the Industrial Exhibition Association.

Gold Medal.

D. & O. Sorby, Guelph, Ont., "Grandeur" (imp.) See above.

CANADIAN BRED CLYDESDALE.

Stallions Foaled Previous to January 1st, 1891.

1st prize, $30; 2nd prize, $20; 3rd prize, $10; 4th prize, $5; 5th prize, very highly commended; 6th prize, highly commended; 7th prize, highly commended.

Judges.—John Duff, Rockwood, Ont.; Arthur Johnston, Greenwood, Ont.; R. Beith, Bowmanville, Ont.

1st, R. D. Dundas, Springville, "McLaws" [1940]; dark bay, stripe on face, little white on feet; foaled May 5th, 1890; bred by exhibitor; sire, General Wolfe (imp.) [844] (5800); dam, Forest Queen (imp.) [657], by Sir Hildebrand (4024), etc.

2nd, Alex. Cameron, Ashburn, Ont., "The Tarten" [2120]; dark bay, white face, four white feet; foaled in August, 1890; bred by exhibitor; sire, Eastfield Chief (imp.) [1129] (6715); dam, Meldrum Meg (imp.) [2132], by Cairnbrogie Stamp (imp.) (4274), etc.

3rd, D. & O. Sorby, Guelph, Ont., "Prince of Eyre" [1532]; bay, white face, nigh hind leg white, fore feet white; foaled May 23rd, 1889; bred by exhibitors; sire, Boydston Boy (imp.) [216] 1872 (111); dam, Jane Eyre (imp.) [217], by Prince of Kilbride (661), etc.

4th, Alsop Bros, Glasgow, Ont., "No. 5, Lieutenant Geordie" [2122]; dark bay, stripe on face, four white feet; foaled June, 1890; bred by Joseph Alsop, Glasgow, Ont.; sire, Lord Lieutenant (imp.) [957] (4529); dam, Jessie Annan [2133], by Mount Annan (imp.) [471] (3851), etc.

5th, James Macdonald, Thornhill, Ont., "Richmond II."; dark brown, white on face and on one front and one hind foot; foaled June, 1889; bred by C. G. Wideman, Almira, Ont.; sire, Richmond [338] (4666); dam, Mag, by Wait-On-Me (3283), etc.

Stallions, Foaled in 1891.

1st prize, $30; 2nd prize, $20; 3rd prize, $10; 4th prize, $5; 5th prize, very highly commended; 6th prize, highly commended; 7th prize, commended.

1st, Graham Bros., Claremont, Ont., "The Cameron" [1707]; bay, white face, four white legs; foaled in April, 1891; bred by exhibitors; sire, Tannahill (imp.) [1205] (4745); dam, Ivey (imp.) [639], by Macfarlane (2988), etc.

2nd, John Vipond, Brooklin, Ont., "Erskine Style" [2121]; bay, ratch on face and off hind pastern white; foaled in May, 1891; bred by exhibitors; sire, Erskine (imp.) [1652] (4986); dam, Brooklin Metal (imp.) [1877] (11166), by Farmer's Boy (2097), etc.

3rd, Job White, Ashburn, Ont., "Ashburn Hero" [2093]; bay, ratch on face, white hind feet; foaled 1891; bred by exhibitor; sire, Tannahill (imp.) [1205] (4745); dam, Jess of Brooklin [1641], by General Duke (imp.) [6] (1663), etc.

4th, John W. Cowie, Claremont, Ont., "Brown John" [2031]; bay, ratch on face, little white on off fore foot, hind legs white; foaled May 2nd, 1891; bred by exhibitor; sire, Brown James (imp.) [731] (5595); dam, Jessie Redmond [2010], by Up to the Times (imp.) [2030] (1547), etc.

5th, A. K. Tegart, Tottenham, Ont., "Peerage" [2035]; light bay, white stripe on face, white feet; foaled in May, 1891; bred by exhibitor; sire, Lord Wilton (imp.) [744] (5180); dam, Sundew (imp.) [2127] (11103), by Macdougall (2269), etc.

6th, S. S. Cummer, Toronto, Ont., "Eureka Boy" [2039]; dark bay, snip on nose; foaled in July, 1891; bred by exhibitor; sire, Plain Boy (imp.) [698] (6141); dam, Brown Maud [2034], by Modern Type (imp.) [25], etc.

7th, Alex. Doherty, Ellesmere, Ont., "Glen Burnie Boy" [2012]; bay, star on forehead, hind feet white; foaled April 24th, 1891; bred by exhibitor; sire, Self Esteem (imp.) [377] (5344); dam, Queen of the Moor [784], by The Border Chief (imp.) [620] (3242), etc.

Stallions, Foaled Subsequent and on January 1st, 1892.

1st prize, $20; 2nd prize, $15; 3rd prize, $10; 4th prize, $5; 5th prize, very highly commended; 6th prize, highly commended; 7th prize, commended.

1st, Alex. Cameron, Ashburn, Ont., "Grand National" [1951]; bay, white face, fore feet and nigh hind leg white, off hind leg partly white; foaled 1892; bred by exhibitor; sire, Tannahill (imp.) [1205] (4745); dam, Mary's Pet (imp.) [1643], by Cairnbrogie Stamp (4274), etc.

2nd, Robt. Davies, Toronto, "Corsock II." [2076]; bay, white stripe on face and two white hind legs; foaled April, 1892; bred by exhibitor; sire, Corsock (imp.) [460] (4942); dam, Sweetheart [1326] (7495), by Macgregor (1487), etc.

Sweepstakes.—Best Canadian Bred Clydesdale Stallion, any Age, Given by the Agriculture and Arts Association.

Gold Medal.

Graham Bros., Claremont, "The Cameron" [1707]. See above.

REPORT OF THE FAT STOCK SHOW.

The following is the report of the Eleventh Annual Provincial Fat Stock Show under the management of the Agriculture and Arts Association of Ontario, the Sheep and Swine Breeders' Associations and the Guelph Fat Stock Club, held in the new Victoria Rink, Guelph, Tuesday, Wednesday and Thursday, December 11th, 12th and 13th, 1894 :

EXECUTIVE OFFICERS.

J. C. Snell, Chairman ; H. Wade, Secretary.

COMMITTEE OF MANAGEMENT.

The Agriculture and Arts Association of Ontario : Messrs. J. C. Snell, Edmonton ; A. Rawlings, Forest; R. McEwen, Byron; J. Sissons, Crown Hill; Joshua Legge, Gananoque ; Wm. Dawson, Vittoria ; and H. Wade, Toronto.

The Sheep and Swine Breeders' Associations : Messrs. John Jackson, Abingdon ; John Kelly, Shakespeare ; S. Coxworth, Claremont ; J. E. Brethour, Burford ; and F. W. Hodson, Guelph.

Fat Stock Club of Guelph : Messrs. Jas. Miller, John Anderson, Guelph ; J. I. Hobson, Mosboro' ; and J. McCorkindale, Guelph.

COMMITTEE ON CATTLE.—A. Rawlings, J. I. Hobson, John Miller, J. Sissons and W. McCorkindale.

COMMITTEE ON SHEEP.—J. Jackson, J. Sissons, J. C. Snell, R. McEwen and F. Hodson.

COMMITTEE ON SWINE.—J. E. Brethour, S. Coxworth, J. Anderson, J. Legge and Wm. Dawson.

COMMITTEE ON POULTRY.—J. Anderson, Jas. Miller and Wm. Dawson.

WEIGHING COMMITTEE.—F. W. Hodson, J. McCorkindale, R. McEwen, J. I. Hobson.

LIST OF PRIZES AWARDED.

CATTLE.

Judges.—Ald. Thos. Crawford, Toronto ; R. Gibson, Delaware ; James Miller, Guelph.

CLASS I.—SHORTHORNS.

Sec. 1.—Steer, two years and under three.

2 entries. 1st prize $20, 2nd $15, 3rd $10.

1st, H. & W. Smith, Hay, "Village Hero" ; white ; calved May 1st, 1892 ; bred by exhibitors ; got by Blake=15177=; dam, Village Lily=15641=, by Prince Albert=3669=, etc.

2nd, Jas. Oke & Son, Alvinston, "Snowball"=20468=; white ; calved March 17th, 1892 ; bred by R. Morehouse, Sutherland's Corners, Ont.; got by Oliver Twist=9908=; dam, Rosy Princess 13th =7861=, by Rosy Prince 3rd=2366=, etc.

Sec. 2.—Steer one year and under two.

2 entries. 1st prize $20, 2nd $15, 3rd $10.

1st, Jas. Oke & Son, Alvinston, "Jumbo"=20513=; red and little white ; calved November 18th, 1893 ; bred by exhibitors ; got by Ironclad=13347=; dam, Kate Killerby=9382=, by Baron Killerby =4222=, etc.

2nd, Jas. Oke & Son, Alvinston, "Ironclad 2nd"=20469=; red and little white ; calved July 10th, 1893 ; bred by exhibitors ; got by Ironclad=13347=; dam, Ella May=14137=, by Lady Rose's Oxford =5335=, etc.

Sec. 3.—Steer, under one year.

2 entries. 1st prize $15, 2nd $10, 3rd $5.

1st, John Bolton, Armstrong's Mills, "Snowball"=20482=; white; calved February 10th, 1894; bred by exhibitor; got by Duke of Albany 3rd=20481=; dam, Madeline Gloster=18133=, by Lord Gloster 9th=10717=, etc.

2nd, Jas. Oke & Sons, Alvinston, "Roan Prince"=20512=; roan; calved April 15th, 1894; bred by exhibitors; got by Ironclad=13347=; dam, Rosie Victor=17862=, by Victor=3979=, etc.

Sec. 4.—Cow or Heifer, three years and over.

5 entries. 1st prize $15, 2nd $10, 3rd $5.

1st, Jas. Crerar, Shakespeare, "Nonpareil Prize"=18810=; white; calved January 16th, 1891; bred by Arthur Johnston, Greenwood, Ont.; got by Indian Chief (imp.)=11108= (57485); dam, Nonpareil of Kinellar (imp.)=8314=, by Luminary (34715), etc.

2nd, Thos. Ballantyne & Son, Stratford, "Meadow Sweet" (imp.)=11054=; roan; calved January 13th, 1886; bred by E. Cruickshank, Aberdeen, Scot.; got by Lanchester (46594); dam, Pelonia, by Lord Forth (26649), etc.

3rd, John Richardson, Fergus, "Maude of Fergus"=20456=; dark roan; calved January 18th, 1889; bred by exhibitor; got by Duke of Kent 6th=12502=; dam, Laura Languish 3rd=12195=, etc.

Special prize given by the Dominion Shorthorn Breeders' Association—$25—to be awarded to the best registered Shorthorn Steer.

H. & W. Smith, Hay, "Village Hero." See above.

CLASS II.—HEREFORDS.

Sec. 4.—Cow, three years and over.

4 entries. 1st prize $15, 2nd $10.

1st, Caleb Rawlings, Ravenswood, "Delilah" (imp.) [276]; calved May 27th, 1883; bred by F. J. Morris, Stapleton Castle, Eng.; sire, Youngster (6269); dam, Daisy (Vol. XII. E.), by Victor 4th, (5116), etc.

2nd, F. W. Stone, Guelph, "Duchess of Moreton VI.," 16725; calved February 22nd, 1885; bred by exhibitor; sire, Picture III., 9235, 6104; dam, Duchess of Moreton II., 13697, etc.

CLASS III.—POLLED ANGUS.

Sec. 4.—Cow, three years and over.

2 entries. 1st prize $15, 2nd $10.

1st, Jas. Bowman, Guelph, "Kyma II.," O. E. F. [123]; calved June 1st, 1886; bred by the Ontario Agricultural College, Guelph, Ont.; sire, Strathglass (imp.) [13] (2357); dam, Kyma (imp.) [75] (4969), by Etonian (1658), etc.

2nd, Jas. Bowman, Guelph, "Kyma of Tweedhill," 17606; sire, King Kyma, 13544; dam, Mayflower of Tweedhill, 14406, etc.

CLASS IV.—GALLOWAYS.

Sec. 4.—Cow, three years and over.

4 entries. 1st prize $15, 2nd $10.

1st, Wm. Kough, Brookholm, "Countess of Glencairn K. 4th," 7987; calved November 20th, 1890; bred by exhibitor; sire, Claverhouse (imp.) 4614 (4250); dam, Countess of Glencairn (imp.) 4617 (9501), by Rover of Newtonairds (2742), etc.

2nd, Wm. Kough, Brookholm, "Mary 6th," 6415; calved October 4th, 1889; bred by exhibitor; sire, Claverhouse (imp.) 4614 (4250); dam, Mary (3291), by Lord Chelmsford (521), etc.

CLASS V.—DEVONS.

Sec. 3.—Cow, three years and over.

1 entry. 1st prize $10, 2nd $5.

W. J. Rudd, Eden Mills, "Victor."

Sec. 4.—Cow, three years and over.

1 entry. 1st prize $15, 2nd $10.

W. J. Rudd, Eden Mills, "Fanny" [985]; calved May 20th, 1889; bred by exhibitor; sire, Lord Lansdowne [933]; dam, Rose [953]; by Sir John A. [852], etc.

CLASS VI.—GRADES.

Judges.—J. Allison, Galt; Henry Thurlow, Fergusondale; C. M. Simmons, Ivan.

Sec. 1.—Steer, two years and under three.

5 entries. 1st prize $25, 2nd $20, 3rd $10.

1st, Jas. Oke & Sons, Alvinston, "Jupiter."
2nd, Wm. Sharp & Sons, Everton, "Roy."
3rd, Jas. Reddock, Everton, "Dick."

Sec. 2.—Steer, one year and under two.

3 entries. 1st prize $20, 2nd $15, 3rd $10.

1st, John Bolton, Armstrong's Mills, "Guelph King."
2nd, Jas. Oke & Sons, Alvinston, "Dainty."
3rd, Jas. Rennie, Wick, "Jack."

Sec. 3.—Steer, under one year.

5 entries. 1st prize $15, 2nd $10, 3rd $5.

1st, D. D. Wilson, Seaforth, "Clinker."
2nd, Israel Groff, Alma, "Sir Oliver."
3rd, Jas. Rennie, Wick, "Harry."

Sec. 4.—Cow, three years and over.

6 entries. 1st prize $20, 2nd $15, 3rd $10.

1st, J. A. Leaman & Co., Halifax, N.S., "Gipsy."
2nd, Jas. Rennie, Wick, "Queen."
3rd, John Rutherford, Roseville, "Nellie Bly."

Sec. 5.—Heifer, over two years and under three.

3 entries. 1st prize $15, 2nd $10, 3rd $5.

1st, Jas. Rennie, Wick, "Daisy."
2nd, Jas. Oke & Sons, Alvinston, "Lena."
3rd, W. T. Murney, Goderich, "Seabird."

Sec. 6.—Heifer, under 2 years.

7 entries. 1st prize $15, 2nd $10, 3rd $5.

1st, Jas. Reddock, Everton, "Millie."
2nd, Jas. Oke & Sons, Alvinston, "Ella May."
3rd, Jas. Oke & Sons, Alvinston, "Mabel."

CLASS VII.—CHAMPIONSHIP PRIZE.

For the best fat animal on the ground, of any breed or sex, Silver Medal by the Agriculture and Arts Association.

H. & W. Smith, Hay, "Village Hero."

POULTRY.

CLASS XX.—DRESSED POULTRY.

Judge—George Murton, Guelph, Ont.

Sec. 1. Best pair Turkey Cockerels, hatched in 1894.

1st, Jas. Bowman, Guelph	$ 5 00
2nd, Jos. Tomalin, Toronto	4 00
3rd, Geo. Fyfe, Gourock	2 00

Sec. 2. Best pair Turkey Pullets, hatched in 1894.

1st, A. Hales, Guelph	5 00
2nd, Jas. Bowman, Guelph	4 00
3rd, Jos. Tomalin, Toronto	2 00

Sec. 3. Best dressed Turkey, hatched in 1894.

1st, A. Hales, Guelph	6 00
2nd, Jas. Anderson, Guelph	4 00
3rd, Jas. Bowman, Guelph	2 00

Sec. 4. Best pair Ganders or Geese, hatched in 1894.

1st, R. Buchanan, Gourock	6 00
2nd, J. R. Caldwell, Fergus	4 00
3rd, J. R. Caldwell, Fergus	2 00

Sec. 5. Best pair Drakes or Ducks, hatched in 1894.

1st, A. Hales, Guelph	6 00
2nd, A. Hales, Guelph	4 00
3rd, A. Hales, Guelph	2 00

Sec. 6. Best pair Fowl Cockerels, hatched in 1894.

1st, D. Stewart, Everton	6 00
2nd, Jas. Bowman, Guelph	4 00
3rd, A. Hales, Guelph	2 00

Sec. 7. Best pair Pullets, hatched in 1894.

1st, Mrs. M. P. Card, Guelph	6 00
2nd, Mrs. M. P. Card, Guelph	4 00
3rd, A. Hales, Guelph	2 00

Sec. 8. Largest and best Turkey, any age.

Jas. Anderson, Guelph	5 00

Sec. 9. Best display of Poultry, hatched in 1894.

1st. A. Hales, Guelph	6 00
2nd, Jas. Anderson, Guelph	4 00
3rd, Jas. Bowman, Guelph	2 00

Sec. 10. Best collection of undressed poultry.

1st, George Fyfe, Gourock	6 00
2nd, A. Hales, Guelph	4 00
3rd, R. Buchanan, Gourock	2 00

NOTE.—The list of prizes awarded for Sheep and Swine will appear in the Report of the Sheep and Swine Breeders' Associations.

APPENDIX I.

PRIZE AWARDS FOR HORSES AND CATTLE AT THE INDUSTRIAL EXHIBITION HELD AT TORONTO IN 1893.

HORSES.

THOROUGHBRED.

Stallion, 4 Years Old and Upwards.

1st, Brown & Gilkinson, Brampton, "Woodburn"; sire, King Alphonso; dam, Molly Wood, etc.
2nd, Job Dickinson, Zion, "Manitoba" (Vol. 5, Bruce's); bay; foaled in 1881; bred by O. Lorilliard, Rancocus Stud Farm, New Jersey; sire, Glenlyon (imp.); dam, Marie Michon, by Melbourne, Jr., etc.
3rd, J. W. Murray, Toronto, "June Day"; sire, Falsette; dam, Virgo.

Stallion, 4 Years Old and Upwards, Best Calculated to Produce Hunters and Saddle Horses.

1st, Fred Row, Belmont, "Norwegian"; sire, Peregrine; dam, Shatemic, etc.
2nd, Geo. Pepper, Markham, "The Chicken"; sire, Billy Pitt; dam, Pheasant, etc.
3rd, Quin & Carter, Brampton, "Wiley Buckles" (Vol. 5, Bruce's); bay, four white feet; foaled in 1885; bred by Wiley Buckles, Champaign, Ill., U.S.; sire, London (imp.); dam, Lizzie Vic, by Uncle Vic, etc.

Stallion, 2 Years Old.

1st, Robt. Davies, Toronto, "Thorncliffe" (—— Bruce); brown; foaled in 1891; bred by exhibitor; sire, Macaroon; dam, Thistle, by King Ernest, etc.

Yearling Colt, Entire.

1st, Robt. Davies, Toronto, "Harpoon" (—— Bruce); chestnut; foaled in 1892; bred by exhibitor; sire, The Chicken (imp.); dam, Thistle, by King Ernest, etc.

Stallion, any Age.

Fred Row, Belmont, "Norwegian." See above.

Mare or Gelding, 4 Years Old and Upwards.

1st, Robt. Davies, Toronto, "Thistle" (Vol. 5, Bruce's); bay; foaled in 1884; bred by D. D. Withers, Brookdale Stud, N. J., U. S.; sire, King Ernest; dam, Invermore, by Lexington, etc.
2nd, F A. Campbell, V.S., Toronto, "Waterloo."
Extra 2nd, Geo. Scagel, Owen Sound, "Gynarchy" (imp.) (Vol. 16, E.); chestnut; foaled in 1885; bred by W. Taylor Sharpe, Eng.; sire, Hogioscope; dam, Princess Theresa, by Young Birdcatcher, etc.
3rd, Geo. Kennedy, Brampton, "Addie B"; sire, Voltigeur; dam, Pet, etc.

Filly, 3 Years Old.

1st, Robt. Davies, Toronto, "Queen Bee" (Bruce); bay; foaled in 1890; bred by G. T. Tuckett, Hamilton, Ont.; sire, Strathspey; dam, Beehive (imp.), by Clifton, etc.

Filly, 2 Years Old.

1st, Robt. Davies, Toronto, "Lou D."; sire, Stonehenge; dam, Buckle, by King Ernest, etc.
2nd, A. Smith, V.S., Toronto, "Barletta."
3rd, Jos. Duggan, "Merrythought"; sire, The Chicken; dam, Algeria, etc.

Brood Mare with Foal of Same Breed by Her Side.

1st, Robt. Davies, Toronto, "Beehive" (imp.) (Vol. 16, E.); brown; foaled in 1876; bred by Mr. Orde, England; sire, Clifton; dam, Beebird, by Buccaneer, etc.
2nd, Jos. Duggan, Toronto, "Lady Peel"; sire, The Chicken; dam, Lady Peel, etc.
3rd, Jos. Duggan, Toronto, "Queen Bess"; sire, The Chicken; dam, Queen Bess, etc.

Foal of 1893.

1st, Robt. Davies, Toronto, "Stingo"; sire, Mikado; dam, Beehive, by Clifton, etc.
2nd, Jos. Duggan, Toronto, ——; dam, Algeria.
3rd, Jos. Duggan, Toronto, ——; dam, Queen Bess.

Mare of any Age.

Robt. Davies, Toronto, "Beehive." See above.

ROADSTERS.

Stallion, 4 Years Old and Upwards.

1st, H. Cargill & Sons, Cargill, "General Jackson"; sire, Royal Leopard; dam, mare by Priam, etc.
2nd, H. G. Charlesworth, Toronto, "Honest Wilkes"; bay, black points; foaled, spring, 1887; bred at the Fisk Stock Farm, Coldwater, Mich., U. S.; sire, Hambletonian Wilkes; dam, by Mambrino Chief, etc.
3rd, A. Frank & Sons, The Grange, "Goldfinder"; sire, Goldleaf; dam, Minnie, by Messenger, etc.
4th, H. Thurlow, Fergusonvale, "Big Ben."
5th, R. Darling, Toronto, "Brown Douglas, Jr."; sire, Brown Douglas; dam, Elliott Mare, by Rolley, etc.

Stallion, 3 Years Old.

1st, John Cherry, Toronto, "Willmot"; sire, Wilton; dam, Maggie Patchen, etc.
2nd, Lorne Stock Farm, West Lorne, "Almonte Stanton"; sire, Solitaire; dam, Rosalin, etc.
3rd, Jas. Keyser, Arkona, "Johnny Smoker," 603; sire, Admonte, 3792, etc.
4th, R. H. Klocks, Klocks' Mills, "Blackonia."

Stallion, 2 Years Old.

1st, J. McBride, Newtonbrook, "Tony Wilkes"; sire, Honest Wilkes; dam, Lizzie, by Highland Boy, etc.
2nd, B. R. McGill, Yelverton, "Guy Wilkes"; sire, Muckle Wilkes; dam, Lady Bell, etc.
3rd, John Broderick, Phelpston, "Johnny Bee."
4th, O. A. Coates, Bothwell, "Sando."

Yearling Colt, Entire.

1st, Simon Fraser, Toronto, "Abdallah Stanton"; sire, Belmont Star; dam, Dolly, by Stanton, etc.
2nd, S. E. Morton, Keswick, "King George"; sire, King Rose, 11914, etc.
3rd, W. H. Moffat, Hockley, "Cyclone II."; sire, Cyclone; dam, mare by Denver, etc.
4th, H. G. Charlesworth, Toronto, "Banker's Boy"; sire, Honest Wilkes; dam, Lady Banker, by Toronto Chief, etc.

Stallion, any Age.

H. Cargill & Son, Cargill, "General Jackson." See above.

Gelding or Filly, 3 Years Old.

1st, H. Cargill & Son, Cargill, "Cricket"; sire, General Jackson; dam, mare by Captain, etc.
2nd, H. Cargill & Son, Cargill, "Sunol"; sire, General Jackson; dam, mare by St. Joe, etc.
3rd, Thos. Aikens, Mt. Charles, "Katie C."; sire, Forest Mambrino, 9865; dam, mare by Erin Chief, etc.
4th, J. L. Clark, Brampton, "Tony"; sire, Porter's Hambletonian; dam, mare by Boston, etc.

Gelding or Filly, 2 Years Old.

1st, H. G. Charlesworth, Toronto, "Queenie Wilkes"; sire, Honest Wilkes; dam, Lady Banker, etc.
2nd, J. L. Clark, Brampton, "Tosca"; sire, Porter's Hambletonian; dam, mare by Boston, etc.
3rd, Thos. Aikens, Mt. Charles, "Lady Forest"; sire, Forest Mambrino; dam, mare by Boston, etc.
4th, John L. Noble, Springfield-on the-Credit, "Nellie."

Yearling Gelding or Filly

1st, Harris & Reynolds, Oakville, "Maggie"; sire, Wilson; dam, mare by Touchstone, etc.
2nd, Eli Dolson, Alloa, "Bonnie"; sire, Forest Mambrino; dam, mare by Almonte, etc.
3rd, J. McBride, Newtonbrook, "Maud S."; sire, Algernon; dam, Lizzie, by Highland Boy, etc.
4th, H. Cargill & Son, Cargill, "Captain"; sire, General Jackson; dam, mare by Captain, etc.

Brood Mare with Foal by Her Side.

1st, J. McBride, Newtonbrook.
2nd, R. M. Wilson, Delhi, “Daisy”; sire, Stanton; dam, mare by Stanton, etc.
3rd, S. Fraser, Toronto, “Dolly Stanton”; sire, General Stanton; dam, mare by Green Monster Morgan, etc.
4th, W. Nickell, “Limehouse”; sire, Clear Grit; dam, mare by Winfield Scott, etc.

Foal of 1893.

1st, S. Fraser, Toronto, ——; sire, Rio Grande; dam, Dolly Stanton, by General Stanton, etc.
2nd, W. C. Short, Salem, “Rene”; sire, Flint Hill, 17596; dam, Polly.
3rd, John McBride, Newtonbrook.
4th, A. Dolson, Alloa, “Victor”; sire, Hambletonian; dam, mare by Belmont Star, etc.

Pair Matched Horses (Geldings or Mares) in Harness, 16 Hands and over 15½ Hands.

1st, E. W. Cox, Toronto, “George,” by Highland Boy; “Frank,” by Whirlwind.
2nd, Geo. H. Gooderham, Toronto, “Andy C.,” by Combination; “Andy H.,” by General Woolsey.
3rd, R. H. Klock & Co., Klock's Mills, “Peerless,” “Rival.”
4th, J. L. Clark, Brampton, “Fashion,” “Zephyr.”

Pair Matched Horses (Geldings or Mares), 15½ Hands and Under.

1st, G. W. Decker, Pickering, “Dr. Trancy”; sire, General Brock; dam, mare by Whirlwind, etc.; “Katie Mutton”; sire, Billy T.; dam, Ayratlaw, etc.
2nd, R. H. Hemstreet, St. Thomas, “Harry”; sire, Western Wilkes; “Alarm”; sire, Rysdyke's Hambletonian; dam by Alhambra Chief, etc.
3rd, J. H. McCullough, Owen Sound, “Jessie Mitchell”; sire, Jim Mitchell; dam by Freddy; “Jeannie Mitchell”; sire, Jim Mitchell.
4th, R. Vernon, Toronto, “Jim” and “Dan.”
5th, E. McIntyre, Brantford, “Maud S.” and “Burlie.”

Single Horse (Gelding or Mare) in Harness, Under 16 and Over 15½ Hands.

1st, T. Wilson, Perrytown, “Starlight.”
2nd, C. A. Burns, Toronto, “Lady Stanton”; sire, General Stanton, etc.
3rd, H. Cargill & Son, Cargill, “Josephine”; sire, St. Joe; dam, mare by Captain, etc.
4th, W. Patterson, Milton West, “George”; sire, Belmont Star; dam, Almonte Myrion, etc.
5th, H. Radcliffe, Toronto, “Thos. Jefferson, Jr.”; sire, Thos. Jefferson; dam, Lady, by Messenger, etc.

Single Horse (Gelding or Mare) in Harness, 15½ Hands and Under.

1st, C. A. Burns, Toronto, “Clara K.”; sire, Clarion Chief; dam, mare by Jack the Barber, etc.
2nd, Geo. H. Gooderham, Toronto, “Tommy Eams”; sire, Dick Turpin; dam, mare by General Stanton, etc.
3rd, Jas. McCarron, Toronto, “Walter”; sire, Forest Mambrino; dam, mare by Bob Marshall, etc.
4th, Isaac Watson, Toronto.
5th, W. H. Booth, Toronto, “Ned B.’; sire, Whirlwind; dam, mare by Clear Grit, etc.

Mare of any Age.

C. A. Burns, “Clara K.” See above.

Stallion, 4 Years Old and Upwards, with 5 of His Progeny of any Sex, Not Over 3 Years Old.

1st, H. Cargill & Son, Cargill, “General Jackson.” See above.
2nd, H. G. Charlesworth, Toronto, “Honest Wilkes.” See above.

STANDARD BRED.

Stallion, 4 Years Old and Upwards.

1st, Dorsey & Little, Winnipeg, ‘Bourbonais,” 11901; sire, Bourbon Wilkes, 2345; dam, Lady Almont, etc.
2nd, Robt. Porteous, Simcoe, “The Wasser”; bay; foaled in 1884; bred by Col. E. W. Conover, Redbank, N.J., U.S.; sire, Gen. Washington, 1161; dam, Kate Taylor, by Aberdeen, 27, etc.
3rd, H. G. Charlesworth, Toronto, “Oliver W.,” 4135; brown; foaled in 1885; bred by J. S. Wagner, Roundhouse Stock Farm, Washington, Ia., U.S.; sire, Wagner's Bashaw, 2004; dam, Puss Cunningham, by Bashaw, 50, etc.

Stallion, 3 Years Old.

1st, H. G. Charlesworth, Toronto, "Judge Mumford," 13630; chestnut: foaled in 1890; bred at the Herndon Stock Farm, Clarksville, Tenn., U.S.; sire, Sir Benton, 8993; dam, Annapolis Girl, by Young Sentinel, 950, etc.
2nd, H. Smith, Claude, "Wiry Jim," 15617; sire, Young Jim, 2009: dam, Annette Moore, etc.
3rd, E. A. Teskey, St. Thomas, "Orphan Chime"; sire, Orpheus; dam, mare by Toronto Chief, Jr., etc.

Stallion, 2 Years Old.

1st, Lorne Stock Farm, West Lorne, "Dr. Lung," 16523; sire, Solitaire; dam, Susie Powell, etc.
2nd, Morris, Stone & Wellington, Welland, "Pelham Boy," 21740: sire, Frank Ellis, 7397; dam, Maud, etc.
3rd, Jos. P. Welch, St. Catharines, "River King," 21827.

Yearling Colt, Entire.

1st, H. Smith, Claude, "Brown Tasker," 23748; sire, Tasker, 23748; dam, Brownie, etc

Stallion, any Age.

Dorsey & Little, Winnipeg, "Bourbonais." See above.

Gelding or Filly, 3 Years Old.

1st, Jas. Childs, Eglington, "Hermie"; sire, Hermit; dam, mare by Bayonet, etc.

Yearling Gelding or Filly.

1st, Benj. Martin, Binbrook, "Mildred Wilkes"; sire, Almont Wilkes; dam, Binbrook Maid, etc.
2nd, Benj. Martin, Binbrook, "Edna Wilkes"; sire, Almont Wilkes; dam, Martina Scott, etc.
3rd, Geo. Jackson & Son, Downsview, "Fairy Mambrino"; sire, Forest Mambrino, 9865; dam, Katie Highland, etc.

Brood Mare, with Foal of Same Breed by Her Side.

1st, Benj. Martin, Binbrook, "Binbrook Maid"; sire, Highland Boy; dam, Catamaran, by Winfield Scott, etc.
2nd, D. H. Charles, Woodstock, "Miss Sterling"; sire, Twilight.
3rd, Geo. Jackson & Son, Downsview, "Kate Highland"; sire, Highland Boy; dam, Catamaran, etc.

Foal of 1893.

1st, H Smith, Claude, ——; sire, Wild Brino; dam, Brownie, etc.
2nd, D. H. Charles, Woodstock, "Donna Alta"; dam, Fanny Alto.
3rd, Geo. Jackson & Son, Downsview, ——; sire, Willie Douglas; dam, Katie Douglas, etc.

Pair Matched Horses (Geldings or Mares), in Harness, 15½ Hands and Under.

1st, Moore & Harris, Oakville.

Single Horse (Gelding or Mare), in Harness, 15½ to 16 Hands.

1st, H. G. Charlesworth, Toronto, "Ollie"; sire, Oliver W., 4135: dam, Bellflower, by Gipsy Boy, 1994.

Single Horse (Gelding or Mare) in Harness.

1st, Geo. Jackson & Son, Downsview, "Molly Brock"; sire, General Brock, 10141; dam, Katie H., etc.
2nd, H. G. Charlesworth, Toronto, "Ailemath"; sire, Capone, 1037; dam, Aleen, by Cuyler, 100, etc.

Mare of any Age.

Benj. Martin, "Edna Wilkes." See above.

CARRIAGE HORSES.

Stallion, 4 Years Old and Upwards.

1st, Thos. Irving, Winchester, "Prince Arthur" (imp.) 1852; bay; foaled in 1889; bred by Henry Watson, Bampton, York, Eng.: sire, Prince Victor, 376; dam, Countess of Wilton, 26, by Fedius Dius, 1592, etc.

2nd, A. C. McMillan, Erin, "Shining Light," 1178: foaled June 10th, 1885: bred by Luke Dale, Atteringon, Eng.; sire, Wonderful Boy, 534; dam by Herod, 218, etc.
3rd, Thos. Irving, Winchester, "Ingmanthorpe Forester, 2nd" (imp.) 1768; brown; foaled in 1889; bred by Ben Smith, Dunsforth, Broughbridge, Eng.; imported in 1892 by exhibitor; sire, Baron Rothsay, 981: dam, Jessie, by Spendthrift, etc.
4th, Bert Ballagh, Orono, "Sir Richard Tichborne," 467.

STALLION, 3 YEARS OLD.

1st, Fred Row, Belmont, "Ambassador," 1661; sire, Philoxenus; dam, Bessie, by Yorkshireman, etc.
2nd, W. C Brown, Meadowvale, "Prince Victor": sire, Prince Alexander, 903; dam, Jean, etc.
3rd, Abram M. VanSickle, Jerseyville, "Wentworth Chief."

STALLION, 2 YEARS OLD.

1st, Philip D. Stotto, Blytheswood, "Royal Prince."
2nd, C. N. Blanshard, V.S., Appleby, "Terrington Boy": sire, Inkerman, 236: dam, mare by Herod, 218, etc.
3rd, C. J. Wilson, Dunkerrow.

YEARLING COLT, ENTIRE,

1st, Wm. Pears, Toronto Junction, "Prince Charlie."
2nd, Jas. H. Johnston Woburn, "Cashfinder": sire, Seagull; dam, Lucie.
3rd, R. M. Wilson, Delhi, "Dick"; sire, Howson; dam, mare by Stanton, etc.

STALLION OF ANY AGE.

Thos. Irving, Winchester, "Prince Arthur." See above.

PAIR MATCHED HORSES (GELDINGS OR MARES), NOT LESS THAN 16½ HANDS.

1st, Quinn Bros., Brampton.
2nd, B. G. Tisdale & Co., Brantford.
3rd, A. Turnbull, Branchton, "George"; sire, Royal George; dam, mare by Black Hawk; "Pilate": sire, Coach: dam, mare by Eclipse.
4th, Mrs. J. Riordan, Toronto, "Darby" and "Billy."

PAIR MATCHED HORSES, 15¾ TO 16½ HANDS.

1st, Westminster Stables, London, "Duplex" and "Double Cross."
2nd, Grenside & McGibbon, Guelph, "Canadian Lad"; sire, Ryshawk; dam, mare by Derby, etc.; "Canadian Lass"; sire, Ryshawk; dam, mare by Cleveland, etc.
3rd, Westminster Stables, London.
4th, Grenside & McGibbon, Guelph, "Spanker": sire, Young Slap Bang, etc.; "Banker": sire, Young Slap Bang. etc.

GELDING OR FILLY, 3 YEARS OLD.

1st, Horace Chisholm, Paris, "Annorel": sire, Aspinwall; dam, Black Pet, etc.
2nd, Chas. Wilmot, Newcastle, "Poo Bah."
3rd, Geo. Chisholm, Milton, "Louise McMillan"; sire, Shining Light; dam, mare by Gold Dust, etc.

GELDING OR FILLY, 2 YEARS OLD.

1st, Mathew Howson, Ashgrove, "Flo"; sire, Shining Light; dam, mare by Peacock, etc.
2nd, Mathew Howson, Ashgrove, "Daisy"; sire, Shining Light; dam, mare by Ryshawk, etc.
3rd, T. J. Chisholm, Hornby, "Katie McMillan"; sire, Shining Light; dam, mare by Derby, etc.

YEARLING FILLY OR GELDING.

1st, Mathew Howson, Ashgrove, "Gertie": sire, Shining Light; dam, mare by Royal George, etc.
2nd, R. M. Willson, Delhi, "Beatrice"; sire, Waterich; dam, mare by Stanton, etc.
3rd, C. E. Bolener, Toronto, "Nancy M."

BROOD MARE, WITH FOAL OF SAME BREED BY HER SIDE.

1st, R. M. Wilson, Delhi, "Lucy"; sire, Stanton; dam, mare by British Splendor, etc.
2nd, R. M. Wilson, Delhi, "Nelly"; sire, Stanton; dam, mare by British Splendor, etc.
3rd, W. J. Thompson, Orkney, "Maud T."; sire, Doctor.

FOAL OF 1893.

1st, W. J. Thompson, Orkney, "Shirley": sire, King Bob; dam, Bobadilla, etc.
2nd, J. H. Johnston, Woburn, "Lightfoot"; sire, Sea Gull; dam, Lucie, etc.
3rd, R. M. Wilson, Delhi, "Billy": sire, Waterich; dam, mare by Stanton, etc.

SINGLE CARRIAGE HORSE (GELDING OR MARE), IN HARNESS, 15¾ TO 16½ HANDS.

1st, Lawrence & Johnston, Milton.
2nd, Westminster Stables, London.
3rd, Grenside & McGibbon, Guelph, "Alderman."
4th, D. H. Grand, East Buffalo, N.Y., U.S.

SINGLE CARRIAGE HORSE (GELDING OR MARE), IN HARNESS, NOT LESS THAN 16½ HANDS.

1st, D. H. Grand, East Buffalo, N.Y., U.S.
2nd, Wm. Ardriel, London, —— ; sire, Yorkshire.
3rd, F. Wyld, Toronto.
4th, W. C. Short, Salem, "Lulu": sire, Clear Grit; dam, Polly.

MARE OF ANY AGE.

Lowes Bros., Brampton, "Jeanette."

STALLION, 4 YEARS AND UPWARDS, WITH 5 OF HIS PROGENY, OF ANY SEX, NOT OVER THREE YEARS OLD.

A. C. McMillan, Eden, "Shining Light." See above.

HUNTERS AND SADDLE HORSES.

SADDLE HORSE (GELDING OR MARE).

1st, Grenside & McGibbon, Guelph, "Katie"; sire, Longueil: dam, mare by Wizard, etc.
2nd, Westminster Stables, London.
3rd, Lowes Bros., Brampton, "Kenilworth."
4th, Grenside & McGibbon, Guelph, "The Gentleman"; sire, Sorrel Cloud; dam, mare by Brandley, etc.

HUNTER, HEAVY WEIGHT, UP TO 15 STONE.

1st, R. Bond, Toronto, "Scalper"; dam, mare by Scalper, etc.
2nd, Westminster Stables, London.
3rd, Geo. Pepper, Markham, "Top Gallant": sire, Top Gallant; dam, mare by Slap Bang, etc.
4th, Grenside & McGibbon, Guelph.

HUNTERS (LIGHT WEIGHT) UP TO 11 STONE.

1st, Grenside & McGibbon, Guelph, "Lady Roseberry"; sire, Young Clear Grit, etc.
2nd, Grenside & McGibbon, Guelph, "Huntress"; sire, Orange Boy; dam, mare by Boston, etc.
3rd, Westminster Stables, London.
4th, Westminster Stables, London

LADIES' SADDLE HORSE.

1st, Grenside & McGibbon, Guelph.
2nd, Westminster Stables, London.
3rd, Westminster Stables, London.
4th, Grenside & McGibbon, Guelph.

HORSE (BEST LEAPER).

1st, Geo. Pepper, Markham.
2nd, F. A. Campbell, V.S., Toronto.
3rd, Geo. Pepper, Markham.
4th, Geo. Pepper, Markham.

Saddle, Hunter or Ladies' Horse.

1st, Grenside & McGibbon, Guelph. "Katie." See above, Toronto.

HORSES FOR GENERAL PURPOSES.

Mare or Gelding, 4 Years and Upwards.

1st, Brian Fenwick, Dixie, "Bert."
2nd, J. L. Clark, Brampton, "Dimple."
3rd, A. Dolson, Alloa, "Polly."

Filly or Gelding, 3 Years Old.

1st, J. L. Clark, Brampton, "Tom Boy."
2nd, J. L. Clark, Brampton, "Dolly."
3rd, Geo. R. Jackson.

Yearling Filly or Gelding.

1st, C. Stewart, Alloa, "Jess"; sire, Orphan ; dam, mare by Messenger, etc.
2nd, A. Dolson, Alloa, "Minnie."
3rd, Samuel Dolson, Alloa, "Vigor."

Brood Mare, with Foal of Same Breed by Her Side.

1st, M. Harrison & Son, Brampton, "Netty"; sire, Young England dam, mare by Hard Fortune, etc.
2nd, Samuel Dolson, Alloa, "Nellie."
3rd, A. Dolson, Alloa, "Maud."

Foal of 1893.

1st, A. Dolson, Alloa, "Prince."
2nd, M. Harrison & Son, Brampton, "Bonnie"; sire, Shining Light; dam, Net, etc.
3rd, Samuel Dolson, Alloa, "Skip."

Matched Team (Geldings or Mares) in Harness

1st, John Shutter, Erie, "Lucy" and "Nellie."
2nd, J. L. Clark, Brampton, "Duck" and "Darling."

Mare or Gelding of any age.

John Shutter, Erie, "Lucy."

CLYDESDALES.

Stallion, 4 Years old and upwards.

1st, D. & O. Sorby, Guelph, "Grandeur" (imp.) [1724] (6814) ; brown, spot on forehead, white hind foot, foaled in 1887 ; bred by Wm. Hunter, Garthland Mains, Straeraer, Scot ; sire, Darnley (222) ; dam, Trim of Garthland (4699), by Farmer (286), etc.

2nd Graham Bros., Claremont, Ont., "Queen's Own" (imp.) [1708] (7176) ; dark bay, stripe on face, nigh hind foot white, tip on off fore foot ; foaled May 1866 ; bred by Wm. Craig, Buchley, Maryhill, Scot.; imported 1891 by exhibitors ; sire, Prince of Wales (673) ; dam, Buckley Kate (1142), by Paisley Jock (581), etc.

3rd Graham Bros., Claremont, Ont., "Lord Harcourt" (imp.) [1430] (7960) ; brown, stripe on face, near fore and off hind feet white ; foaled May 27th, 1887 ; bred by James Spark, Cantlyhills, Stonehaven, Scot.; imported August, 1890, by exhibitors ; sire, Pride of the Clans (4632) ; dam, Jewel of Cantlyhills (6765), by Prince Charley (629), etc.

4th, D. & O. Sorby, Geulph, "Bold Boy" (imp.) [1149) (4257) ; bay, white face and legs ; foaled May 13th, 1884 ; bred by John Marr, Cairnbrogie, Old Meldrum, Aberdeenshire, Scot.; imported in 1889 by exhibitors ; sire, Lord Erskine (1744) ; dam, Lalla Rookh (3767), by General (323), etc.

Stallion, 3 Years Old.

1st, Wm. Innes, Bradford. "Symmetry" (imp.) [1713] (9413); light bay, stripe on face, three white feet; foaled April 4th, 1890; bred by W. McAdam, Whitepark, Castle Douglas, Scot.; imported 1891 by exhibitor; sire, Ensign (5749); dam, Lady Fleet (6388), by Pride of Borgue (2332), etc.

2nd, John Davidson, Ashburn, "Westfield Stamp" (imp.) [1819] (9467); light bay, stripe on face, hind feet white; foaled May 10th, 1890; bred by James Watt, Westfield, Elgin, Scot.: imported August, 1891, by Davidson & Sorby, Ashburn, Ont.; sire, Cairnbrogie Stamp (4272); dam, Luck (11146); by Johnny (414), etc.

3rd, S. C. Johnston, Manilla, "Balgownie" (imp.) [2033] (9116); brown, white on face, hind feet white; foaled May 8th, 1890; bred by Amos Cruickshank, Sittyton, Summerhill, Scot.; imported August, 1891, by Davidson & Sorby, Ashburn and Guelph; sire, Gallant McCamon (6766); dam, Autumn Bud (7133), by Lord Erskine (1744), etc.

4th, T. W. Evans, Yelverton, "Uamvar" (imp.) (9457); bay, ratch on face, hind feet white; foaled in 1890; bred by A. Muirhead, Drumguhassle, Drymen, Stirlingshire, Scot.; sire, Lord Ailsa (5974); dam, Young Maggie, by Topman (886), etc.

Stallion, 2 Years Old.

1st, Cameron, Alex., Ashburn, Ont., "Royal Stamp" [1950]: bay, white face, four white feet; foaled June 9th, 1891; bred by exhibitor; sire, Tannahill (imp.) [1205] (4745): dam, Mary's Pet (imp.) [1653], by Cairnbrogie Stamp (4274), etc.

2nd, Graham Bros., Claremont, "The Cameron" [1707]; bay, white face and legs: foaled April 23rd, 1891; bred by exhibitors; sire, Tannahill (imp.) [1205] (4745); dam, Ivy (imp.) [639], by Macfarlane (2988), etc.

3rd, S. J. Prouse, Ingersoll, "Millrigg Stamp" (imp.) (9617); brown, stripe on face, spot on belly, white feet; foaled July 8th, 1891; bred by John Wilson, Millrigg, Skelmorlie, Scot.; imported by P. Holmes, Beechville, Ont.; sire, Macneil (4566); dam, Maggie of the Flatt (4274), by Prince of Wales (666), etc.

Stallion of any Age.

Wm. Innes, Bradford, "Symmetry" (imp.) [1713] (9431). See above.

Filly, 3 Years Old.

1st, Robt. Davies, Todmorden, "Young Lily" (imp.) [1672]; brown, white markings on face and hind legs; foaled April 9th, 1890; bred by L. D. Gordon-Duff, Drummuir, Keith, Scot.; imported in 1891 by exhibitors; sire, McCamon (3818); dam, Lily o'th Dale (4570), by Johnny (414).

2nd, D. & O. Sorby, Guelph, "Sunbeam of Cults" (imp.) [1925]; bay, ratch on face, white legs; foaled May 21st, 1890; bred by Ferguson & Menzies, Cults, Castle Kennedy, Stranraer, Scot.; imported August, 1891, by exhibitors; sire, Henry Irving of Drumflower (4440); dam, Mabel of Cults (7221), by Darnley (222), etc.

3rd, Robt. Davies, Toronto, "Candour" (imp.) [1646]; brown, star on forehead, hind legs white; foaled May 4th, 1890; imported in 1891 by Graham Bros., Claremont; bred by J. Williamson, Langlands, Kirkcudbright, Scot.; sire, Macgregor (1487); dam, Darling (5148), by Farmer (288), etc.

Filly, 2 Years Old.

1st, Robt. Davies, Todmorden, "Pride of Thorncliffe" (imp. in dam) [1937]; bay, stripe on face, hind legs white; foaled April, 1891; bred by Major L. D. Gordon-Duff, Drummuir, Keith, Scot.; imported in dam, August, 1890, by Graham Bros., Claremont; sire, Lord Montrose (7973); Pride of Drummuir (imp.) [1325], by Culloden (5684), etc.

2nd, Robt. Davies, Todmorden, "Lady Thorncliffe" (imp. in dam) [1936]; light bay, stripe on face, on hind leg white; foaled April, 1891; bred by Wm. Kerr, Bandeath, Sterling, Scot.; imported in dam August, 1890, by Graham Bros., Claremont: sire. Carruchan Stamp (5627); dam, Lady Dunmore (imp.) [1321], by Earl Grange (4350), etc.

3rd, James I. Davidson & Son, Balsam, "Kate Hill 2nd" [1923] 6337; bay, white face, nigh fore leg and off hind leg white; foaled March 20th, 1891; bred by exhibitors; sire, Lewie Gordon (imp.) [1602] (7918); dam, Kate Hill (imp.) [215] (4129), by Young Surprise (1034), etc.

Yearling, Filly or Gelding.

1st, Jas. I. Davidson & Son, Balsam, "Boydston Lass 5th" [1922]; dark grey, white face, hind legs white, little white on front legs; foaled February 19th, 1892; bred by exhibitors; sire, Lewis Gordon (imp.) [1602] 5530 (7918); dam, Boydston Lass [1920] 2388, by Boydston Boy (imp.) [216] 1872 (11), etc.

2nd, F. A. Gardiner, Brittania, "Lady Ellen" [1992]; brown, stripe on face, hind feet white; foaled June 15th, 1892; bred by Neil Smith, Brampton; sire, St. Simon (imp.) [1832] (8975); dam, Dandy of Peel [1989], by Home Ruler (imp.) [896] (5078), etc.

Brood Mare with Foal of Same Breed by Her Side.

1st, Robert Davies, Todmorden, "Bessie Bell" (imp.) [1318] (7843); brown, stripe on face, hind legs white; foaled May, 1894; bred by Robert Spittal, Kenmuir, Tollcross, Scot.; imported August, 1890, by Graham Bros., Claremont; sire, Darnley (222); dam, Mature (649), by Time o' Day (875), etc.

2nd, Jas. I. Davidson & Son, Balsam, "Boydston Lass" [1920] (2388); bay, small ratch on face, hind feet white; foaled June 29th, 1883; bred by W. M. Miller, Claremont; sire, Boydston Boy (imp.) [216] 1872 (111); dam, Bell (imp.) [617] 169 (519), by Prince of Renfrew (664), etc.

3rd, Graham Bros., Claremont, "Nellie" (imp.) [970]; brown, ratch on face; foaled April 27th, 1886; imported August, 1889; bred by Jasper Howat, Hallbarnes, Ayrshire, Scot.; sire, Laird of Bute [4490]; dam, Maggie of Hallbarnes (7352), by Doncaster (238), etc.

Foal of 1893.

1st, Robert Davies, Todmorden, "Belle of Thorncliffe"; sire, Energy (imp.) [1432] (7691); dam, Bessie Bell (imp.) [1318] (7843), by Darnley (222), etc.

2nd, S. J. Prouse, Ingersoll, ——— ; sire, Lord Marmion; dam, Daunby [913], by Lorne (imp.) [1078] (500), etc.

Mare of any Age.

Robert Davies, Todmorden, "Pride of Thorncliffe" (imp. in dam) [1937]. See above.

Mare with Two of Her Progeny.

1st, Robert Davies, Todmorden, "Pride of Drummuir" (imp.) [1325]; bay, stripe on face, white markings on hind legs; foaled May 10th, 1888; bred by Major L. D. G. Duff, Drummuir, Keith, Scot.; imported August, 1890, by Graham Bros., Claremont; sire, Culloden (5684); dam, Helen Macgregor (7180) by Macgregor (1487), etc.

Stallion, 4 Years Old and Upwards, with Five of His Progeny of Any Sex, Not Over 3 Years Old.

1st, Alex. Cameron, Ashburn, "Tannahill" (imp.) [1205] (4745); light brown, white face and legs; foaled May 22nd, 1884; imported August, 1885; bred by John Cassie, Westerton, Rothie, Norman, Aberdeenshire, Scot.; sire, Lord Erskine (1744); dam, Bloom (1088), by British Empire (1599), etc.

Canadian Bred Clydesdale Stallion, Any Age, Recorded in the Canadian Clydesdale Stud Book.

1st, D. &. O. Sorby, Guelph, "Prince of Eyre" (1532); bay, white face, nigh hind leg white, hoof heads on fore feet white; foaled May 23rd, 1889; bred by exhibitors; sire, Boydston Boy (imp.) [216] 1872 (111); dam, Jane Eyre (imp.) [217], by Prince of Kilbride (661), etc.

SHIRES.

Stallion, 4 Years Old and Upwards.

1st, H. N. Crossley, Rosseau, "Bravo II." (imp.) [250] (12835); bay; foaled 1888; bred by R. N. Sutton-Nelthorpe, Scawby Hall, Brigg, Eng.; imported May, 1893, by exhibitor; sire, Will o' the Wisp (6574); dam, Boadicea, by True Briton (2684), etc.

2nd, Geo. Garbutt, Thistletown, "Darnley" (imp.) [183] (3585); brown; foaled in 1882; bred by Thos. Johnson, Walton, Peterboro', Eng.; imported in 1884 by exhibitor; sire, Champion (450); dam, Mare, by Thumper (2137), etc.

3rd, John Donkin, Riverview, "Mirfield Merchant" (imp.) [236] (7766); bay, ratch on face, nigh fore foot and hind legs white; foaled 1887; bred by Dean, Donsby, Pinchbeck, Linc. Eng.; imported September, 1891, by exhibitor; sire, Conqueror (3042); dam, mare by Drayman (663), etc.

Stallion, 3 Years Old.

1st, Wm. Mullin, Hillsburg, "Cock Robin" (imp. in dam) [245]; chestnut, stripe on face, three white legs, one white foot; foaled April 31st, 1890; bred by John Whatmough, Ridgeway, Sheffield, Eng.; imported in dam July, 1889, by Ormsby & Chapman, Springfield on-the-Credit; sire, Game Cock (7252); dam, Leake Polly (imp.) [61], by Monster (2846), etc.

Yearling Colt, Entire.

1st, Morris, Stone & Wellington, Welland, "Frederick William" [246]; bay, star on face, off fore foot white, white on hind legs; foaled spring 1892; bred by exhibitors; sire, Prince Charles [196]; dam, Elsie Morin (imp.) [34], by Welton Tom (3395), etc.

Stallion of Any Age.

Wm. Mullin, Hillsburg, "Cock Robin" (imp. in dam) [245]. See above.

Filly, 3 Years Old.

1st, Morris, Stone & Wellington, Welland, "Lena" [81]; brown, star on face, hind legs white; foaled in 1890; bred by exhibitors; sire, Chieftain II. (imp.) [194] (5723); dam, Alice (imp.) [33], by Adam (65), etc.

Filly, 2 Years Old.

1st, Alex. Doherty, Ellesmere, "Flossie" [88]; bay; foaled June 1891; bred by Walter Glendenning, Ellesmere, Ont.; sire, King of the Castle (imp.) [71] (3171); dam, Topsy (imp.) [52], by King of the Valley (1248), etc.

2nd, Morris, Stone & Wellington, Welland, "Daisy" [82]; brown, white face, hind legs white; foaled spring of 1891; bred by exhibitors; sire, Chieftain II., (imp.) [194] (5723); dam, Elsie Morin (imp.) [34], by Welton Tom (3395), etc.

3rd, Chas. Jackson, Mayfield, "Sham" ——— ; sire, Samson the Great (imp.) [142] (2896); dam, Bounce (imp.) [44], by Active (56), etc.

Yearling Filly or Gelding.

1st, Morris, Stone & Wellington, Welland, "Bridget" [92]; bay, stripe on face, white on nose, nigh fore foot and hind legs white; foaled 1892; bred by exhibitor; sire, Prince Charles [196]; dam, Lottie (imp.) [35], by Adam (65), etc.

Brood Mare With Foal of Same Breed by Her Side.

1st, Morris, Stone & Wellington, Welland, "Elsie Morin" (imp.) [34]; brown, star on face, white hind foot; foaled in 1884; bred by Edward Bilton, Tudworth, Throme, Yorkshire, Eng.; imported in 1886 by exhibitors; sire, Welton Tom (3395); dam, mare by Red House Boy (1849), etc.

2nd, Chas. Jackson, Mayfield, "Bounce" (imp.) [44]; brown; foaled 1876; bred by J. T. Purvis, Knarth Park, Gainsborough, Linc. Eng.; imported 1883 by exhibitor; sire, Active (56); dam, Flower by Champion (436), etc.

Foal of 1893.

1st, Morris, Stone & Wellington, Welland, "Fanny" [93]; brown, star and stripe on face, hind feet white; foaled 1893; bred by exhibitors; sire, Prince Charles [196]; dam, Elsie Morin (imp.) [34], by Welton Tom (3395), etc.

2nd, Chas. Jackson, Mayfield.

Mare with Two of Her Progeny.

1st, Morris Stone & Wellington, Welland, "Elsie Morin" (imp.) [34]. See above.

Span of Shire Horses (Geldings or Mares).

1st, Chas. Jackson, Mayfield, "Blossom" and "Fan."

Mare of Any Age.

Horace N. Crossley, Rosseau, "Sapphire" (imp.) [70]; light bay, white face, hind feet white; foaled in 1889; imported in 1891; bred by J. E. Shaw, Brooklands Farm, Holywell Green, Halifax, Eng.; sire, Northern King (2635); dam, Jewel, by Master Tom (5202), etc.

Stallion, 4 Years and Upwards, with Five of His Progeny, Any Sex, Not Over 3 Years Old.

John Donkin, Riverview, "Mirfield Merchant" (imp.) [236] (7766). See above.

Heavy Draught Horses, Canadian Bred Only, Stallion, 4 Years Old and Upwards.

1st, D. & O. Sorby, Guelph, "Prince of Eyre" [1532]. See above.

2nd, P. Kelly, jr., Brechin, Ont., "Pride of Dollar" [962]; bay, stripe on face, nigh hind foot white; foaled May 6th, 1887; bred by Wm Cox, Thornhill, Ont.; sire, Pride of Perth (imp.) [282] 2264 (2336); dam, Sally of Thornhill [328], by Sir Wm. Wallace (imp.) [123] 1, etc.

3rd, Isaac Devitt & Son, Floradale, "Douglas Macpherson" (imp. in dam) [1791]; bay, small stripe on face, four white feet, foaled May 18th, 1889; bred by Wm. Hood, Chapelton Borgue, Kirkcudbright, Scot.; imported in dam August, 1888, by D. & O. Sorby, Guelph, Ont.; sire, Macpherson (3825); dam, Bell (imp.) [1755], by Good Hope (1679), etc.

Stallion, 3 Years Old.

1st, G. Taylor, Kippen, "Gulf Stream" 392; bay, ratch on face, hind legs white; foaled July 6th, 1890; bred by exhibitor: sire, Lord Erskine II. —261—; dam, Pay When Ready —467—, by Welcome (imp.) [888] (904). etc.

2nd, Alex. Cameron, Ashburn, "The Tartar"; brown, white face, four white feet; foaled, August 27th, 1890; bred by exhibitor; sire, Eastfield Chief (imp.) [1129] (6715); dam, Meldrum Mag (imp.), by Cairnbrogie Stamp (4274), etc.

3rd, Thamesford Horse Stock Improving Co., Thamesford, "McGinty" [1841]; bay, stripe on face, hind feet white; foaled April, 1890; bred by exhibitor; sire, Norseman (imp.) [443] (4600); dam, Daunby [913], by Lorne (imp.) [1078] (500), etc.

Stallion, 2 Years Old.

1st, John White, Ashburn, "Job."

2nd, J. & J. A. Boag, Queensville, Ont., "Blooming Heather" [1983]; brown, ratch on face, foaled April 22nd, 1891; bred by exhibitors; sire, Macneilage (imp.) [1117] (2992): dam, Brown Peggy [1079], by Scotsman (imp.) [166] 154, etc.

3rd, S. S. Cummer, Thornhill, "Eureka Boy" [2030]; bay, snip on nose; foaled July 1st, 1891; bred by exhibitor; sire, Plain Boy (imp.) [698] (6141); dam, Brown Maud [2034], by Modern Type (imp.) [25], etc.

Yearling Colt, Entire.

1st, Wm. Foster & Son, Humber, "Addison"; bay, stripe on face, hind feet white, little white on off fore foot; foaled, July 26th, 1892; bred by exhibitors; sire, Macneilage (imp.) [1117] (2992); dam, Lill, by Prince of Kilbain (imp.) [533] (5268), etc.

Stallion of Any Age.

D. & O. Sorby, Guelph, "Prince of Eyre" [1532]. See above.

Filly, 3 Years Old.

1st, Samuel McArthur, Oro Station, "Sunrise" [2018]; light bay, grey mane and tail, grey hairs through body; foaled May 20th. 1890; bred by John A. Duff, Rockwood, Ont.; sire, Tannahill (imp.) [1205] (4745): dam, Lady Dufferin, by General Duke (imp.) [6] 1721 (1663), etc.

2nd, Wm. Foster & Son, Humber, "Jess"; chestnut, stripe on face, one hind foot and front feet white; foaled July 2nd, 1890; bred by exhibitors; sire, Lochhill (imp.) [532] (2950); dam, Lill, by Prince of Kilblain (imp.) [533] (5268), etc.

3rd, S. J. Prouse, Ingersoll, "Kitty McKay"; sire, Norseman (imp.) [443] (4600); dam, Kate McKay, etc.

Filly, 2 Years Old.

1st, J. J. Balsam, Balsam, "Louisa," 7449; dark bay, stripe on face, three white legs; foaled July 1s 1891; bred by exhibitor.

2nd, Wm. Foster & Son, Humber, "Leoline"; bay, stripe on face, four white feet; foaled May 26th, 1891; bred by exhibitors; sire, Pride of Perth (imp.) [282] 2264 (2336); dam, Nettie of Castlemore [368], by Lochhill (imp.) [532] (2950), etc.

3rd, Geo. Taylor, Kippen, "Carthagenian" [1930]; bay, white face, hind legs white, foaled July 17th, 1891; bred by exhibitor; sire, Canny Scotchman (imp.) [1945] (6576); dam, Countess of Thornpark, by Stranraer (imp.) [162] (2441), etc.

Yearling Filly or Gelding.

1st, S. McArthur, Oro Station, "Belle of Oro Station": bay, ratch on face, little white on hind legs, foaled April 29th, 1892; bred by exhibitor; sire, Montrave Chief (imp.) [537] (5222); dam, Silver Tail —293—, by Comyn Macgregor (imp.) [657] (3535), etc.

2nd, Isaac Devitt & Son, Floradale, "Aggie Macpherson" —454—; bay, small ratch on face, hind feet white; foaled May 26th, 1892; bred by exhibitors; sire, Douglas Macpherson (imp. in dam) [1791]; dam, Lady Macarthur —452—, by Macarthur (imp.) [360] (3815), etc.

3rd, J. W. Linstead & Son, Queensville, "Lady Sutton."

Brood Mare with Foal of Same Breed by Her Side.

1st, Wm. Foster & Son, Humber, "Poll"; bay, stripe on face, three white feet; foaled June 12th, 1889; bred by exhibitors; sire, Nelson (imp.) [341] (2301); dam, Lill, by Prince of Kilblain (imp.) [533] (5268), etc.

2nd, P. W. Boynton & Son, Dollar, "Blossom"; bay, stripe on face, off hind foot white; foaled 1884; bred by exhibitor; sire, Silent James (imp.) [116] (2668); dam, Diamond, by Royal Tom (imp.), etc.

3rd, Wm. Foster & Son, Humber, "Nettie of Castlemore" [368]; bay, star on face, hind feet white; foaled May 28th, 1885; bred by D. & R. McGeachy, Coleraine, Ont.; sire, Lochhill (imp.) [532] (2950); dam, Maggie Chisken (imp.) [367] (5585), by Farmers' Fancy (302), etc.

FOAL OF 1893

1st, Samuel McArthur, Oro Station, "Bonnie Ethel": bay, patch on face, hind legs white; foaled May 10th, 1893; bred by exhibitor; sire, Sir Walter (imp.) [1131] (8272); dam, Sunrise [2018], by Tannahill (imp.) [1205] (4745), etc.

2nd, Wm. Foster & Son, Humber, ———; bay, stripe on face, four white feet; foaled May 25th, 1893; bred by exhibitors; sire, Macneilage (imp.) [1117] (2992); dam, Polly, by Nelson (imp.) [341] (2301), etc.

3rd, Geo. Taylor, Kippen, "Canny Scotchman II." —393—: bay, white face, nigh hind foot white: foaled April 28th, 1893: bred by exhibitor; sire, Canny Scotchman (imp.) [1945] (6576): dam, Pay When Ready —467—, by Welcome (imp.) [888] (904), etc.

SPAN OF HEAVY DRAUGHT HORSES (GELDINGS OR MARES).

1st, Isaac Levitt & Son, Floradale, "Isabel" and "Bess."

2nd, J. Hewson & Son, Grahamsville, "Doll" and "Minnie."

3rd, The Shedden Co. (Ltd.), Toronto, "Martin": bay; foaled in 1889: bred by A. Martin, Brechin: sire, Blucher; dam, mare by Comet, etc. "Brechin"; bay, foaled in 1888: bred by A. Martin, Brechin; sire, Blucher; dam, mare by Comet, etc.

MARE WITH TWO OF HER PROGENY.

1st, Geo. Taylor, Kippen, "Pay When Ready" —467—: bay, star on face, nigh hind foot white; foaled May 21st, 1882: bred by exhibitor; sire, Welcome (imp.) [888] (904); dam, Rose by Wellington (imp.) [36] (1861), etc.

SUFFOLK.

STALLION, 3 YEARS OLD AND UPWARDS.

1st, J. H. Strong, Winchester, "Captain William," 1993; sire, Checkmate: dam, Smart 2nd, etc.

2nd, Mossom Boyd & Co., Bobcaygeon, "Duke of Thorndale," 2278; sire, Cross Invador, 1429: dam, Vanity.

STALLION OF ANY AGE.

J. H. Strong, Winchester, "Captain William," 1993. See above.

MARE, 3 YEARS OLD AND UPWARDS.

1st, Mossom Boyd & Co., Bobcaygeon, "Maude," 2875; sire, Cross Invador, 1439; dam, Vanity, 1630, etc.

2nd, Mossom Boyd & Co., Bobcaygeon, "Princess" 2933; sire, Cross Invador, 1439; dam, Patch, 1536, etc.

MARE OF ANY AGE.

Mossom Boyd & Co., Bobcaygeon, "Princess," 2933. See above.

HACKNEY.

STALLION, 4 YEARS OLD AND UPWARDS.

1st, R. Beith & Co., Bowmanville, "Jubilee Chief" (imp.) —1— (2122): dark brown, four white feet: foaled in 1887; bred by Wm. Martin, Scoreby, Grange Gate, Helmsley, York, Eng.; imported Feb., 1890, by Robt. Kerr, Reaburn, Man.: sire, Pilot (1323); dam, Queen of the Forest (297), by Fireaway (249).

2nd, A. G. Ramsay, Hamilton, "Courier" (imp.) —26— (1751); bay; foaled 1887; bred by C. E. Cooke, Litcham, Swaftham, Norfolk, Eng; imported July, 1890, by Dr. W. Seward Webb, Shelburne, Vt, U.S; sire, Canvasser (114); dam, May Day (479), by Cannon Ball (113), etc.

3rd, Graham Bros., Claremont, "Seagull" (imp.) —8— (2261); dark chestnut; foaled in 1887: bred by John T. Robinson, Bridlington, Yorkshire, Eng.: imported in 1890, by exhibitors; sire, Danegelt. (174); dam, Lady Lucy (1646), by Knapp (399), etc.

STALLION, 3 YEARS OLD.

1st, R. Beith & Co., Bowmanville, "Ottawa" (imp.) —2—; chestnut; foaled in 1890; bred by Wm. Martin, Scoreby Grange, York, Eng.: imported in dam, February, 1890, by Robt. Kerr, Reaburn, Man.; sire, Lord Derwent 2nd (1034); dam, May Flower (imp.) —2— (767, by Highflyer (1648), etc.

2nd Thos. Irving, Winchester, "Kilnwick Fireaway" (imp) —5— (3698); bay, off hind foot partly white; foaled July 2nd, 1890; bred by John T. Elgey, Kilnwick, Pocklington, York, Eng; imported July, 1892, by Thomas Irving, Winchester; sire, Lord Swanland (1834); dam, Trip, by Tripaway (2296). etc.

3rd, H. N. Crossley, Rosseau, "Fireworks" (imp.) —16— (3602); brown: foaled in 1890: bred by Jas. Scott, Clayfield, Pocklington, Yorkshire, Eng.: imported in 1893 by exhibitor: sire, Wildfire (1221); dam, Pretty Poll (1574), by Superior (1410), etc.

STALLION, 2 YEARS OLD.

1st, M. H. Cochrane, Hillhurst, Que., "Hayton Shales" (imp.) —22 – ; bay, little white on near hind leg ; foaled 1891 ; bred by Thos. Wardell, Barmby, New Inn, Barmby Moor. York, Eng.; imported May, 1893, by exhibitor ; sire. Pioneer (1088) ; dam, Polly (4559), by Young Fireaway (1367), etc.

2nd, G. H. Hastings, Deer Park, Toronto, "Star of Nepal II." (imp.) —17 – (Vol. 10); chestnut ; foaled in 1891 ; bred by R. Beldam, Witchford, Ely, Eng. ; imported by exhibitor ; sire, Star of Mepal (1920); dam, Queen of Denmark (4610), by Telegraph (826), etc.

YEARLING COLT, ENTIRE.

1st, M. H. Cochrane, Hillhurst, Que., "Royal Dane" (imp.) —11 – ; bay, star on face, fore feet white ; foaled May 21st, 1892 ; bred by J. Richardson, Hayton, Yorks, Eng ; imported by exhibitor ; sire, Cannyman (2882) ; dam, Princess Dagmar (imp,) —10 – (4590), by Danegelt (174), etc.

2nd, R. Beith & Co., Bowmanville, "Banquo" —3 –; dark bay, star on face, four white feet; foaled June, 1892 ; bred by exhibitor ; sire, Jubilee Chief (imp.) —1 – (2122) ; dam, Mona's Queen (imp.) —4—, by Dictator (1471), etc.

3rd, R. Beith & Co , Bowmanville, "Lord Rosebery" —4—: brown, off fore foot white ; foaled April, 1892 ; bred by exhibitor : sire, Jubilee Chief (imp.) —1 – (2122) ; dam, Florence (imp.) —3— (661), by Randolph (1123), etc.

STALLION OF ANY AGE.

R. Beith & Co., Bowmanville, "Ottawa" (imp.) —2—. See above.

FILLY, 3 YEARS OLD.

1st, R. Beith & Co., Bowmanville, "Lady Aberdeen" (imp. in dam) —5 – 356 ; brown ; foaled May, 1890 ; bred by Wm. Martin, Scoreby, Grange Gate, York, Eng ; imported in dam, 1890, by Robt. Kerr, Reaburn, Man.; sire, Lord Derwent 2nd (1031) ; dam, Florence (imp.) —3 – (661), by Randolph (1123), etc.

2nd, R. Beith & Co., Bowmanville, "Winnifred" (imp. in dam) —6 – 357 ; dark bay ; foaled May, 1890 ; by Robt. Atkinson, Newton-on-Derwent. York, Eng.: imported in dam in 1890, by Robt. Kerr, Reaburn, Man.; sire, Wildfire (1224) ; dam, Lizette (imp) —1— (2259), by Anconeus (887), etc.

3rd, M. H. Cochrane, Hillhurst. Que., "Miss Dale" (imp.) —17—; bay. little white on feet ; foaled 1890 ; bred by estate of Thos. Harker. Cliff Dales, Haltham, Brough, York, Eng.; imported May, 1893, by exhibitor ; sire, Pioneer (1088); dam, Lady Dale, by Denmark (177), etc.

FILLY, 2 YEARS OLD.

1st, G. H. Hastings, Deer Park.

YEARLING FILLY

1st, M. H. Cochrane, Hillhurst, "Cameo" (imp.) —18 –; chestnut, fore feet white ; foaled 1892 ; bred by Robt. Brigham, Molla Hill, Millington. Pocklington, Yorks, Eng.: imported May, 1893, by exhibitor ; sire, Danegelt (174) ; dam, Lady Millington (2915), by Star of the East (798), etc.

2nd, Graham Bros., Claremont, "Cherry Ripe" —8 –; bay, star on face, black points ; foaled May, 1892 ; bred by exhibitors : sire, Seagull (imp.) —8 – (2261) ; dam, [Dandy —1— F.S.]

BROOD MARE WITH FOAL OF SAME BREED BY HER SIDE.

1st, M. H. Cochrane, Hillhurst, Que., "Princess Dagmar," (imp.) —10 – ; bay, hind feet, white ; foaled, 1888 ; bred by Jas. Richardson, Hayton, York, Eng. ; imported November, 1891, by exhibitor ; sire, Danegelt (174) ; dam, Dipper (2096), by Bounding Willow (95).

2nd, R. Beith & Co., Bowmanville, "Mona's Queen" (imp.) —4 – ; chestnut, star on face, nigh hind foot and front feet white ; foaled, 1889 ; bred by Wm. Martin, Scoreby, Grange Gate, Helmsley, York, Eng. ; imported, February, 1890, by Robt. Kerr, Reaburn, Man. ; sire, Dictator (1471) ; dam, Mayflower (imp.) —2 – (767), by Highflyer (1648), etc.

3rd, Graham Bros., Claremont, "Comet" (imp.) [—7— (2636)] ; chestnut, stripe on forehead ; foaled, 1889 ; bred by David Maitland, Compstone, Kirkcudbright, Scot. ; imported in 1891 by exhibitors ; sire, Dorrington 2nd (956) ; dam [Cigarette (210)].

FOAL OF 1893.

1st, R. Beith & Co., Bowmanville.

2nd, Graham Bros., Claremont, "Rosewood," —25 – ; chestnut, narrow stripe on face ; foaled, May, 1893; bred by exhibitors ; sire, Seagull (imp.) —8 – (2261) : dam, Comet (imp.) —7— (2636), by Darrington 2nd (956), etc.

3rd, M. H. Cochrane, Hillhurst, Que., "Danish Prince," —24 – ; chestnut, four white feet ; foaled, 1893 ; bred by exhibitor ; sire, Fordham (imp.) (287) ; dam, Princess Dagmar (imp) —10 – (4590), by Danegelt (174), etc.

PAIR OF MATCHED HORSES, HIGH STEPPERS (MARES OR GELDINGS), NOT MORE THAN 15½ HANDS.

1st, D. H. Grand, East Buffalo, N.Y., U.S.

2nd, D. N. Charles, Woodstock, "Bonnie Swell" and "Belle Swell."

3rd, Grenside & McGibbon, Guelph, "Daphne" and "Eulalia."

SINGLE HORSE, HIGH STEPPER (MARE OR GELDING), NOT MORE THAN 15¾ HANDS.

1st, M. H. Cochrane, Hillhurst, Que., "Miss Baker" (imp.) —16— ; brown, one white foot ; foaled, May, 1893 : bred by Jas. Case, Cockthorpe, Wells, Norfolk, Eng. ; imported, May, 1893, by exhibitor ; sire, Ruby (1342) ; dam, Betsey Baker (1441), by Norfolk Jack (516), etc.
2nd, Westminster Stables, London.
3rd, D. H. Grand, East Buffalo, N. Y., U. S.

MARE OF ANY AGE.

R. Beith & Co., Bowmanville, "Lady Aberdeen" (imp. in dam) —5—. See above.

CATTLE.

SHORT HORNS.

BULL, 4 YEARS OLD AND UPWARDS.

1st, James Currie, Everton, "War Eagle" =13015= ; red ; calved June 27th, 1889 ; bred by Arthur Johnston, Greenwood ; got by Warfare (imp.) =6452= (56712) ; dam, Daisy's Star =11479=, by Duke of Lavender (imp.) =1243= (51135), etc.
2nd, Jas. Crerar, Shakespeare, "Nobleman" =13130= ; roan ; calved January 16th, 1889 ; bred by J. & W. Russell, Richmond Hill ; got by Tofthills (imp.) =11113= (56656) ; dam, Isabella 14th =13944=, by Royal Booth 2nd =3818=, etc.
3rd, James Leask, Greenbank, "Roan Duke 29th" =15039= ; red and little white ; calved March 29th, 1889 ; bred by Thos. Nelson & Sons, Brantford ; got by Ingram =14272= ; dam, Roan Duchess of Oxford =7695=, by Fifth Lord Oxford =3457=, etc.

BULL, 3 YEARS OLD AND UNDER 4.

1st, J. & W. B. Watt, Salem, "Clan Stewart" =14381= ; red and little white ; calved December 26th, 1889 ; bred by exhibitors ; got by Musketeer =10740= ; dam, Village Bud =13371=, by Barmpton Hero =324=, etc.
2nd, Simmons & Quirie, Ivan and Delaware, "Mina Chief" =13670= ; red ; calved December 7th, 1889 ; bred by Arthur Johnston, Greenwood ; got by Indian Chief (imp.) =11108= (57485) ; dam, Nonpareil 36th (imp.) =5186=, by Gladstone (43256), etc.
3rd, James Gardhouse & Sons, Highfield, "Earl of Aberdeen 3rd" =14292= ; red and little white ; calved March 18th, 1890 ; bred by Thos. Nelson & Sons, Brantford ; got by Ingram =14272= ; dam, Lady Aberdeen 5th =9407=, by 2nd Prince of Springwood =978=, etc.

BULL 2 YEARS OLD AND UNDER 3.

1st, John Miller & Sons, Brougham, "Sittyton Stamp" (imp.) ; red, wlth little white ; calved June 3rd, 1891 ; bred by Wm. Duthie, Collyrie, Aberdeen, Scot. ; imported by exhibitors ; got by Leonidas (59260) ; dam, Spirea, by Cumberland (46144), etc.
2nd, D. D. Wilson, Seaforth, "Prime Minister" (imp.) =15280= ; red ; calved February 10th, 1891 ; bred by Wm. Duthie, Collyrie, Aberdeen, Scot. ; imported October 13th, 1891, by exhibitor ; got by Chesterfield (57049) ; dam, Princess Lovely, by Field Marshal (47870), etc.
3rd, H. Cargill & Sons, Cargill, "Saladin" (imp.) =Vol. 9= ; roan ; calved April 11th, 1891 ; bred by Wm. Duthie, Tarves, Aberdeen, Scot. ; imported by J. Miller & Sons, Brougham ; got by Vice Chancellor (56681) ; dam, Sea Foam, by Gondolier (52956), etc.

BULL, 1 YEAR OLD.

1st, Thos. Russell & Son, Exeter, "Riverside Hero II." =16615= ; roan ; calved February 14th, 1892 ; bred by exhibitors ; got by Sultan Selim (imp.) =4129= ; dam, Bracelet II. (imp.) =2115=, by Chevalier (41223), etc.
2nd, Eastwood Bros., Mimico, "Valasco Nineteenth" =16587= ; roan ; calved December 16th, 1891 ; bred by exhibitors ; got by Nonpareil Chief =13669= ; dam, Vacuna 13th =14738=, by Prince Albert =3669=, etc.
3rd, H. K. Fairbairn, Thedford, "Great Chief" =16998= ; roan ; calved December 9th, 1892 ; bred by Arthur Johnston, Greenwood ; got by Indian Chief (imp.) =11108= (57485) ; dam, Mina Lavender =10073=, by Duke of Lavender (imp.) =1243= (57135), etc.

BULL CALF, UNDER 1 YEAR.

1st, John Miller, Markham, "Aberdeen" (imp.) ; red ; calved November 20th, 1892 ; bred by Geo. Campbell, Kinellar, Aberdeen, Scot. ; imported by John Isaac Markham ; got by Sittyton Sort (61831) ; dam, Selina, by Royal James (54973), etc.

2nd, R. & S. Nicholson, Sylvan, "Valaco 22nd" =18414=; white; calved October 14th, 1892; bred by exhibitors; got by Nonpareil Chief =13669=; dam, Vacuna XI =14038=, by Prince Albert =3669=, etc.

3rd, Wm. Redmond, Millbrook, "Sir Walter" =17442=; red; calved November 14th, 1892; bred by exhibitor; sire, Baron Fenelon =13599=; dam, Marigold II. = =, by Oxford Lad =7473=, etc.

4th, Simmons & Quirie, Ivan and Delaware, "Allan 2nd" =18434=; red; calved November 25th, 1892; bred by C. M. Simmons, Ivan; sire, Mina Chief =13670=; dam, Red Rose of Strathallan 3rd =13677=, by Ercildoune =617=, etc.

5th, Wm. Redmond, Millbrook, "Starlight"; red; calved November 27th, 1892; bred by exhibitor; sire, Baron Fenelon =13699=; dam, Nelly Gray =10231=, by Challenge =2933=, etc.

Bull of Any Age.

Jas. Currie, Everton, "War Eagle =13015=. See above.

Cow, 4 Years Old and Upwards.

1st, J. & W. B. Watt, Salem, "Ruby Vensgarth" =15559=; dark red; calved November 29th, 1887; bred by Samuel Holman, Columbus, Ont.; got by Vensgarth (imp.) =1309= (47192); dam, Florence 6th =9152=, by Royal Barmpton (imp.) =217= (45503), etc.

2nd, Jas. Crearer, Shakespeare, "Red Ruby" =14920=; red and little white; calved May 3rd, 1887; bred by exhibitor; got by Laird of Kinellar =7246=; dam, Duchess 8th =2812=, by Hiram =704=, etc.

3rd, John Miller & Sons, Brougham, "Crocus" (imp.); red; calved March 12th, 1886; bred by S. Campbell, Kinellar, Aberdeen, Scot.; imported by exhibitors; got by Banner Bearer (49034); dam, Cecilia Gladstone II., by Gladstone (43286), etc.

Cow, 3 Years Old.

1st, Thos. Russell & Son, Exeter, "Jane Gray Second" =18149=; dark roan; calved November 10th, 1889; bred by exhibitors; got by Mariner (imp.) =2720=; dam, Jane Gray =9327=, by Strathallan =3727=, etc.

2nd, John Miller & Sons, Markham, "Lydia 5th"; red; calved November 5th, 1889; bred by exhibitors; got by Vice Consul (imp.) =4132= (60112); dam, Lydia, by Gladstone (43286), etc.

3rd, D. D. Wilson, Seaforth, "Waterloo Princess 3rd" (imp.).

Heifer, 2 Years Old.

1st, Simmons & Quirie, Ivan and Delaware, "Strathallan of Kent" =Vol. 9=; roan; calved January 3rd, 1890; bred by exhibitor; got by Sir Christopher =3877=; dam, Tupper's Ann = =, by Tupper =8040=, etc.

2nd, Jas. Crerar, Shakespeare, "Rosabel"; red, and little white; calved March 19th, 1891; bred by exhibitor.

3rd, H. & W. Smith, Hay, "Fragrance" = =; white; calved November 17th, 1890; bred by exhibitors; got by Prince Albert (imp.) =3669=; dam, Felspar =15638=, by Vocalist =9520=, etc.

Heifer, 1 Year Old.

1st, H. & W. Smith, Hay, "Vanity" =Vol. 9=; roan; calved September 25th, 1891; bred by exhibitors; got by Village Hero =14342=; dam, Vesta II. =16861=, by Prince Albert =3669=, etc.

2nd, Thos. Russell & Son, Exeter, "Medora 12th" =Vol. 10=; dark roan; calved March 6th, 1892; bred by exhibitor; got by Sultan Selim (imp.) =4129=; dam, Medora 8th (imp.) =5174=, by Cabul (42860), etc.

3rd, J. & W. B. Watt, Salem, "Matchless 14th = =; dark roan; calved October 22nd, 1891; bred by exhibitors; got by Barmpton Hero =324=; dam, Matchless of Elmhurst 5th =3885=, by Baron Louan 3rd =338=, etc.

Heifer Calf, Under 1 Year.

1st, R. & S. Nicholson, Sylvan, "Vacuna 23rd" =Vol. 10=; roan; calved October 23rd, 1892; bred by exhibitors; got by Nonpareil Chief =13669=; dam, Vacuna 20th =22406=, by Warrior (imp.) =4133=, etc.

2nd, H. Cargill & Son, Cargill, "Ury Queen 2nd" =23242=; red and white; calved November 27th, 1892; bred by exhibitors; got by Albert Victor (imp.) =6315= (55250); dam, May Queen (imp.) =11094=, by Gravesend (46461), etc.

3rd, Wm. Redmond, Millbrook, "Rose 13th."

4th, J. & W. B. Watt, Salem, "Mysie 45th"; red; calved November 22nd, 1892; bred by exhibitors; got by Barmpton Hero =324=; dam, Mysie 44th =17247=, by Baron Camperdown (imp.) =1218= (47389), etc.

5th, Simmons & Quirie, Ivan and Delaware, "Elvira 18th" = =; roan; calved November 17th, 1892; bred by C. M. Simmons, Ivan, Ont.; got by Mina's Chief =13670=; dam, Elvira 11th =11616= by Duke of Guilders (imp.) =1240= (47740), etc.

Cow and Two of Her Progeny, all Owned by Exhibitor.

1st, James Crerar, Shakespeare.

Four Calves, Under 1 Year Old, Bred and Owned by Exhibitor.

1st, Wm. Redmond, Millbrook.
2nd, R. & S. Nicholson, Sylvan.
3rd, Simmons & Quirie, Ivan and Delaware.

Herd Consisting of One Bull and Four Females, Over 1 Year, Owned by Exhibitor.

1st, J. & W. B. Watt, Salem.
2nd, John Miller & Son, Brougham.
3rd, Thos. Russell & Son, Exeter.

Female of Any Age.

1st, Simmons & Quirie, Ivan & Delaware, "Strathallan of Kent" Vol. 9—. See above.

HEREFORDS.

Bull, 3 Years Old and Upwards.

1st, F. W. Stone, Guelph, "Cherub 4th" (imp.) 32333 (15179).
2nd, F. W. Stone, Guelph, "Conquest," 54098.

Bull, 2 Years Old.

1st, F. W. Stone, Guelph, "Satin."

Bull, 1 Year Old.

1st, F. A. Fleming, Weston.
2nd, F. W. Stone, Guelph.
3rd, F. W. Stone, Guelph.

Bull Calf, Under 1 Year.

1st, F. A. Fleming, Weston.
2nd, F. A. Fleming, Weston.

Bull of Any Age.

F. W. Stone, Guelph.

Cow, 4 Years Old and Upwards.

1st, F. A. Fleming, Weston.
2nd, F. W. Stone, Guelph.
3rd, F. W. Stone, Guelph.

Cow, 3 Years Old.

1st, F. A. Fleming, Weston.
2nd, F. W. Stone, Guelph.
3rd, F. W. Stone, Guelph.

Heifer, 2 Years Old.

1st, F. A. Fleming, Weston.
2nd, F. W. Stone, Guelph.

Heifer, 1 Year Old.

1st, F. A. Fleming, Weston.
2nd, F. W. Stone, Guelph.
3rd, F. W. Stone, Guelph.

Heifer Calf, Under 1 Year.

1st, F. A. Fleming, Weston.
2nd, F. A. Fleming, Weston.
3rd, F. W. Stone, Guelph.

Herd Consisting of One Bull and Four Females Over 1 Year Old, Owned by Exhibitor.

1st, F. A. Fleming, Weston.
2nd, F. W. Stone, Guelph.

POLLED ANGUS.

BULL, 3 YEARS OLD AND UPWARDS.

1st, Wm. Stewart & Son, Lucasville "Lord Forest," 13152.

BULL CALF, UNDER 1 YEAR.

1st, Jas. Bowman, Guelph.
2nd, Jas. Bowman, Guelph.
3rd, Wm. Stewart & Son, Lucasville.

BULL OF ANY AGE.

Wm. Stewart & Son, Lucasville, "Lord Forest," 13152.

COW, 4 YEARS OLD AND UPWARDS.

1st, Jas. Bowman, Guelph "Kyma 2nd."
2nd, Wm. Stewart & Son, Lucasville.
3rd, Wm. Stewart & Son, Lucasville.

COW, 3 YEARS OLD.

1st, Jas. Bowman, Guelph "Kyma 3rd."

HEIFER, 2 YEARS OLD.

1st, Wm. Stewart & Son, Lucasville; "Heather Blossom of W. G." 15595.

HEIFER, 1 YEAR OLD.

1st Wm. Stewart & Son, Lucasville; "Topsy of W. G." 156.

HERD CONSISTING OF ONE BULL AND FOUR FEMALES, OVER 1 YEAR OLD, OWNED BY EXHIBITOR.

1st William Stewart & Son, Lucasville.

FEMALE OF ANY AGE.

Jas. Bowman, Guelph, "Kyma."

GALLOWAYS.

BULL, 3 YEARS OLD AND UPWARDS.

1st, D. McCrae, Guelph. "Canadian Borderer," 5945.
2nd, D. McCrae, Guelph, "Norfolk," 6745.

BULL, 2 YEARS OLD.

1st, John Sibbald, Annan, "Paris of Claverhouse," 7983.
2nd, D. McCrae, Guelph, "Addington," 8805.

BULL, 1 YEAR OLD.

1st, D. McCrae, Guelph.
2nd, A. M. & R. Shaw, Brantford.
3rd, A. M. & R. Shaw, Brantford.

BULL CALF, UNDER 1 YEAR.

1st, D. McCrae, Guelph.
2nd, D. McCrae, Guelph.
3rd, A. M. & R. Shaw, Brantford.

Bull of Any Age.

D. McCrae, Guelph, "Canadian Borderer," 5945.

Cow, 4 Years Old and Upwards.

1st, D. McCrae, Guelph.
2nd, A. M. & R. Shaw, Brantford.
3rd, A. M. & R. Shaw, Brantford.

Cow, 3 Years Old.

1st, D McCrae, Guelph.
2nd, A. M. & R. Shaw, Brantford.
3rd, D. McCrae, Guelph.

Heifer, 2 Years Old.

1st, D. McCrae, Guelph.
2nd, A. M. & R. Shaw, Brantford.
3rd, D. McCrae, Guelph.

Heifer, 1 Year Old.

1st, D. McCrae, Guelph.
2nd, W. H. & C. H. McNish, Lyn.
3rd, D. McCrae. Guelph.

Heifer Calf, Under 1 Year.

1st, D. McCrae, Guelph.
2nd, D. McCrae, Guelph.
3rd, A. M. & R. Shaw, Brantford.

Herd Consisting of One Bull and Four Females Over 1 Year Old, Owned by Exhibitor.

1st, D. McCrae, Guelph.
2nd, A. M. & R. Shaw, Brantford.
3rd, D. McCrae. Guelph.

DEVONS.

Bull, 2 Years Old.

1st, W. J. Rudd, Eden Mills, "Abe" [999]; calved April 24th, 1891: bred by exhibitor; sire, Young Ensign [925]: dam, Dido [951], by Victor [884], etc.

Bull, 1 Year Old.

1st, W. J. Rudd, Eden Mills, "Dainty Davy" [1011]: calved April 4th, 1892; bred by the Ontario Agricultural College, Guelph; sire, Roses Duke O. E. F. [954]: dam, Effie [963], by Lord Lansdowne [933], etc.

Bull Calf, Under 1 Year.

1st, W. J. Rudd, Eden Mills, "Charlie" [1010]; calved April 25th, 1893; bred by exhibitor; sire, Billy [998]; dam, Gem [986], by Lord Lansdowne [933], etc.
2nd, W. J. Rudd, Eden Mills, "Jack"; calved May 20th, 1893; bred by exhibitor; sire, Billy [998]; dam, Dido [951], by Victor [884], etc.

Bull of any Age.

W. J. Rudd, Eden Mills, "Abe" [999]. See above, Toronto.

Cow, 4 Years Old and Upwards.

1st, W. J. Rudd, Eden Mills, "Dido" [951]; calved May 20th, 1887; bred by exhibitor; sire, Victor [884]; dam, Beauty [800], by Kempenfelt [719], etc.

2nd, W. J. Rudd, Eden Mills, "Frances" [962]; calved March 10th, 1888; bred by W. J. Rudd, Eden Mills; sire, Lord Lansdowne [933]; dam, Red Rose [890], by Professor [847], etc.

3rd, W. J. Rudd, Eden Mills, "Gem" [986]; calved January 15th, 1889; bred by exhibitor; sire, Lord Lansdowne [933]; dam, Charlotte [954], by Curly Tom [886], etc.

Cow, 3 Years Old.

1st, W. J. Rudd, Eden Mills, "Tulip" [1015]; calved June 4th, 1890; bred by exhibitor; sire, Duke [947]; dam, Dido [951], by Victor [884], etc.

2nd, W. J. Rudd, Eden Mills, "Julia" [1013]; calved May 2nd, 1890; bred by exhibitor; sire, Duke [947]; dam, Rose [849], by King of the Ocean [727], etc.

Heifer, 2 Years Old.

1st, W. J. Rudd, Eden Mills, "Pansy" [1016]; calved May 5th, 1891; bred by exhibitor; sire, Young Ensign [925]; dam, Charlotte [954], by Curly Tom [886], etc.

Heifer, 1 Year Old.

1st, W. J. Rudd, Eden Mills, "Daisy" [1036]; calved May 2nd, 1892; bred by exhibitor; sire, Young Ensign [925]; dam, Flower of the Flock [889], by Curly Tom [886], etc.

Heifer Calf, Under 1 Year.

1st, W. J. Rudd, Eden Mills, "Gaiety II."; calved February 25th, 1893; bred by exhibitor; sire, Billy [998]; dam, Gaiety [1011], by Duke [947], etc.

2nd, W. J. Rudd, Eden Mills, "Julia II."; calved March 4th, 1893; bred by exhibitor; sire, Billy [998]; dam, Julia [1013]; by Duke [947], etc.

Herd Consisting of One Bull and Four Females Over 1 Year, Owned by Exhibitor.

1st, W. J. Rudd, Eden Mills.

AYRSHIRES.

Bull, 3 Years Old and Upwards.

1st, Jas. Drummond, Petite Côte, Que., "Victor of Park Hill" —5091—; dark red; calved October 16th, 1891; bred by exhibitor; sire, Rob Roy of Park Hill —876—; dam, Victoria —1731—, by Lorne —183—, etc.

2nd, Jas. McCormick, Rockton, "Sir Laughlin" —1156—; red and white; calved March 3rd, 1890; bred by D. Nicol, Cataraqui, Ont.; sire, Norseman —478—; dam, Silvia —856—, by Stonewall —151—, etc.

3rd, W. M. & J. C. Smith, Fairfield Plains, "Hamilton Chief" —875—; red and white; calved April 18th, 1890; bred by D. Morton & Sons, Hamilton, Ont.; sire, Royal Chief (imp.) —75—; dam, Judy (imp.) —1206—, by Red Prince (1000), etc.

Bull, 2 Years Old.

1st, D. McLachlan, Petite Côte, Que., "Silver King," 5809; sire, Traveller; dam, Nellie Osborne, 5358.

2nd, John Newman, Lachine, Que.

3rd, Kains Bros., Byron, "Dominion Chief" —1214—; white and brown; calved August 22nd, 1891; bred by D. Morton & Sons, Hamilton; sire, Royal Chief (imp.) —75—; dam, Jess (imp.) —1209—, by Faircross 3rd (637), etc.

Bull, 1 Year Old.

1st, Jas. Johnston, Como, Que., "Prince Henry of Barcheskie" (2865); white and brown; calved May 1st, 1892; bred by And. Mitchell, Scotland; sire, Traveller of Drumquin (1441); dam, Mary Queen of Scots 2nd (8559), in Scotland.

2nd, D. McLachlin, Petite Côte, Que., "Norman of Robertland," 6199; sire, Silver King, 5807; dam, Brownie 6th, of Barcheskie.

3rd, Kains Bros., Byron, "Captain" —1478—; red and white; calved May 21st, 1892; bred by exhibitors; sire, Castle-Douglas (imp. in dam) —1126—; dam, Lucy of Byron —1085—, by Watty Mars —268—, etc.

Bull Calf, Under 1 Year.

1st, Jas. Drummond, Petite Cote, Que., "Fred of P. H.," 6318; sire, Rob Roy of P. H., 3971; dam, Violet, 2483.

2nd, Jas. Drummond, Petite Côte, Que., "Nelson of P. H.," 6321; sire, Victor of P. H., 5091; dam, Budd, 3675.

3rd, Kains Bros., Byron, "Byron" —1477—; red and white; calved September 6th, 1892; bred by exhibitors; sire, Castle-Douglas (imp. in dam) —1126—; dam, Jennie of Auchenbrain (imp.) —129—, by Duke 3rd (647), etc.

Bull of any Age.

D. McLachlin, Petite Côte, Que., "Silver King," 5809. See above.

Cow, 4 Years Old and Upwards.

1st, Jas. Drummond, Petite Côte, Que., "Viola 3rd" (imp.) —1612—; red and white; calved 1882; bred by Chas. Kay, Mill Farm, Garganock, Scotland; imported by exhibitor; sire, Gallant Graham; dam, Viola II. of Mill Farm, by Ethelbert, etc.

2nd, Jas. Drummond, Petite Côte, Que., "Viola 5th," 4540, white and small red spots; calved August 23rd, 1887; bred by exhibitor; sire, Promotion (imp.) 3212; dam, Viola 3rd (imp.) —1612—, by Gallant Graham, etc.

3rd, Jas. McCormick, Rockton, "Lassie of Rockton" —420—; red and white, calved February 25th, 1886; bred by exhibitor; sire, Frank —127—; dam, Rosebud —198—, by Indian Chief —129—, etc.

Cow, 3 Years Old.

1st, Kains Bros., Byron, "Amy" —1861—; red and white; calved September 25th, 1889; bred by exhibitors; sire, Earl of Fife —584—; dam, Lucy of Byron —1085— by Watty Mars —268—, etc.

2nd, D. McLachlan, Petite Côte, Que.

3rd, D. McLachlan, Petite Côte, Que.

Heifer, 2 Years Old.

1st, Jas. Johnston, Como, Que., "Brown Bessie of Barcheskie (imp.) (8561), 6427; brown; calved May 3rd, 1891; bred by Robert Osborne, Scotland; sire, Craigs of Kyle of Drumquin, 1793; dam, Joan of Drumquin, Vol. 13, etc.

2nd, Jas. Johnston, Como, Que., "Bonnie Doon of Barcheskie" (8562); 6428, white with brown spots; calved Sept. 29th, 1892; bred by Sir Mark I. Stewart Bart, Scot.; sire, Blooming Heather of Drumquin (1918); dam, Stately of Southwick, 8587, etc.

3rd, D. W. Lachlan, Petite Côte, Que.

Heifer, 1 Year Old.

1st, J. Drummond, Petite Côte, Que., "Lily of Hardiston 2nd," 5924; dark red and white; calved October 10th, 1891; bred by exhibitor; sire, Rob Roy of Park Hill —876—; dam, Lily of Hardiston (imp.) —1642—, by Young Baron, etc.

2nd, Jas. Johnston. Como, Que.

3rd, Kains Bros., Byron, "Nancy" —2298—; red and white; calved September 10th, 1891; bred by exhibitors; sire, Prince of Byron —583—; dam, Jennie of Auchenbrain (imp.) —129—, by Duke 3rd (647), etc.

Heifer Calf, Under 1 Year.

1st, Jas. Drummond, Petite Côte, Que., "Lily of Hardiston 3rd," 6319; dark red and white; calved October 1st, 1892; bred by exhibitor; sire, Rob Roy of Oxford —876—; dam, Lily of Hardiston (imp.)—1642—, by Young Baron, etc

2nd, M. Ballantyne, St. Marys, "Lady Maud"—2321—; red and white; calved November 20th, 1892; bred by exhibitor; sire, Jock Meadowside —713;— dam, Maud Sullivan —2072—; by John L. Sullivan —362—, etc.

3rd, J. McCormick & Son, Rockton, "Flora Campbell"; red and white; bred by exhibitors.

Cow and Two of Her Progeny All Owned by Exhibitor.

1st, Jas. Drummond, Petite Côte, Que., "Lily of Hardiston," (imp.)—1642—; red and little white; calved April 29th, 1883; bred by Duncan Keir Hardiston, Bucklyvil, Scot.; imported by exhibitor; sire, Young Baron; dam, The Twin, etc.

2nd, Jas. Drummond, Petite Côte, Que., "Viola 3rd," (imp.)—1612—; red and white; calved 1882; bred by Chas. Kay, Mill Farm, Gargnnock, Scot.; imported by exhibitor; sire, Gallant Graham; dam, Viola 2nd, etc.

3rd, J. McCormick & Son, Rockton, "Primrose IV," —302—; red and little white; calved September 10th, 1878; bred by Thos. Guy, Oshawa, Ont.; sire, Indian Chief—129—; dam, Primrose III —196—; by Eclipse —105 —etc.

Four Calves, Under 1 Year Old, Bred by Exhibitor.

1st, Jas. Drummond, Petite Côte, Que.
2nd, Jas. McCormick & Son, Rockton.
3rd, M. Ballantyne, St. Marys.

Herd Consisting of One Bull and Four Females, Over 1 Year Old, Owned by Exhibitor.

1st, Jas. Drummond, Petite Côte, Que.
2nd, D. McLachlan, Petite Côte, Que.
3rd, Jas. Johnston, Como, Que.

Female of Any Age.

Kains Bros., Byron, "Amy"—1861—. See above.

JERSEYS.

Bull, 3 Years Old and Upwards.

1st, J. H. Smith & Son, Highfield, "Hugo Alpha, of Oak Lawn," 23499.
2nd, Geo. Smith & Son, Grimsby, "Nell's John Bull."
3rd, Geo. Osborne, Kingston, "Primrose Park's Pacha," 26203.

Bull, 2 Years Old.

1st, D. Meadley, Erin, "Myrtle Fawn."
2nd, S. F. McKinnon, Toronto, "Dainty 7th."

Bull, 1 Year Old.

1st, A. McLean Howard, jr., Toronto, "Kaiser of St. Lambert," 31132.
2nd, W. A. Reburn, St. Anne de Bellevue, Que., "Baron Hugo of St. Anne's."
3rd, Wm. Rolph, Markham, "Two Hundred Per Cent.," 35592.

Bull Calf, Under 1 Year.

1st, Geo. Osborne, Kingston.
2nd, W. A. Reburn, St. Anne de Bellevue, Que.
3rd, J. H. Smith & Son, Highfield, "Zip of Highfield."

Bull of Any Age.

Geo. Osborne, Kingston.

Cow, 4 Years Old and Upwards.

1st, J. H. Smith & Son, "Highfield Maud," 57487.
2nd, Wm. Rolph, Markham, "St. Lambert's Nora," 42132.
3rd, Geo. Smith & Son, "Grimsby Kit."

Cow, 3 Years Old.

1st, Geo. Smith & Son, Grimsby.
2nd, A. McLean Howard, Jr., Toronto.
3rd, J. H. Smith & Son, "Highfield Phyllis," 12142.

Heifer, 2 Years Old.

1st, H. Cook, Orillia, "Stella of Trout Run," 81354.
2nd, J. H. Smith & Son, Highfield, "Unorna May," 72081.
3rd, H. Cook, Orillia, "Emma of Exmoor," 8157.

Heifer, 1 Year Old.

1st, W. A. Reburn, St. Anne de Bellevue, Que., "Gypsy Hugo of St. Anne's 2nd"—86591.
2nd, H. Cook, Orillia, "Lertie of Exmoor," 81362.
3rd, A. McLean Howard, jr., Toronto, "Emma of Glen Duart," 89401.

HEIFER CALF, UNDER 1 YEAR.

1st W. A. Reburn, St. Anne de Bellevue, Que., "Jolie Pet of St. Anne's."
2nd, Geo. Osborne, Kingston, "Primrose Park's Peri," 89365.
3rd, W. A. Reburn, "St. Anne de Bellevue, Que., "Jolie Dora of St. Anne's."
4th, W. A. Reburn, St. Annes de Bellevue, Que., "Jolie Bess of St. Anne's."

FOUR CALVES, UNDER 1 YEAR, BRED AND OWNED BY EXHIBITOR.

1st, W. A. Reburn, St. Anne de Bellevue, Que.
2nd, Geo. Osborne, Kingston.
3rd, J. H. Smith & Son, Highfield.

GUERNSEYS.

BULL, 3 YEARS OLD AND UPWARDS.

1st, W. H. and C. H. McNish, Lyn, "Florist" 2257.
2nd, R. Moody & Sons, Guelph, "Kinecroft Chieftain," 3407.

BULL, 2 YEARS OLD.

1st, J. N. Greenshields, Danville, Que., "Adventurer."
2nd R. Moody & Son, Guelph, "Rosebury Duke."

BULL, 1 YEAR OLD.

1st, W. H. and C. H. McNish, Lyn, "Prestos of Elm Grove."
2nd, J. N. Greenshields, Danville. Que., "Isalugh Duke," 3411.

BULL CALF, UNDER 1 YEAR.

1st, J. N. Greenshields, Danville, Que., "Isalugh Style."
2nd, R. Moody & Son, Guelph, "Columbine Chief."

BULL OF ANY AGE.

J. N. Greenshields, Danville, Que., "Adventurer."

COW, 4 YEARS OLD AND UPWARDS.

1st, J. N. Greenshields, Danville, Que., "Eliza C. 2nd." 3725.
2nd, W. H. and C. H. McNish, Lyn, "Rosanne 4th," 4605.

COW, 3 YEARS OLD.

1st, J. N. Greenshields, Danville, Que., "May Queen 7th."
2nd, W. H. and C. H. McNish, Lyn.

HEIFER, 2 YEARS OLD.

1st, W. H. and C. H. McNish, Lyn.
2nd, J. N. Greenshields, Danville, Que., "Sarah C. 3rd."

HEIFER, 1 YEAR OLD.

1st, R. Moody & Son, Guelph, "Bluett II."
2nd, J. N. Greenshields, Danville, Que., "May Queen 8th."

HEIFER CALF, UNDER 1 YEAR.

1st, W. H. and C. H. McNish, Lyn, "Calanthe."
2nd, J. Greenshields, Danville, Que., "Isalugh Belle."

HERD CONSISTING OF ONE BULL AND FOUR FEMALES, OVER 1 YEAR OLD, OWNED BY EXHIBITOR.

1st, J. N. Greenshields, Danville, Que.
2nd, W. H. and C. H. McNish, Lyn.

FEMALE OF ANY AGE.

W. H. and C. H. McNish, Lyn.

HOLSTEINS.

BULL, 3 YEARS OLD AND UPWARDS.

1st, McDuffee & Butters, Stanstead, Que., "Artis Peer," 9048.
2nd, R. S. Stevenson, Ancaster, "Romulus," 6275.
3rd, A. C. Hallman & Co., New Dundee, "Cornelius," 46.

BULL, 1 YEAR OLD.

1st, W. G. Ellis, Bedford Park, "Sir Archibald Mascotte," 353.
2nd, A. C. Hallman & Co., New Dundee, "Netherland Oaggie Eden," 536.
3rd, R. S. Stevenson.

BULL CALF, UNDER 1 YEAR.

1st, A. C. Hallman & Co., New Dundee, "Royal Netherland."
2nd, McDuffee & Butters, Stanstead, Que.
3rd, A. C. Hallman & Co., New Dundee, "Netherland Caesar."

BULL OF ANY AGE.

McDuffee & Butters, Stanstead, Que., "Artis Peer," 9048.

COW, 4 YEARS OLD AND UPWARDS.

1st, Smith Bros., Churchville, "Cornelia Teusen," 22.
2nd, Smith Bros., Churchville, "Jongsti Oaggi," 74.
3rd, McDuffee & Butters, Stanstead, Que., "Tryntje of Pine Grove," 12822.

COW, 3 YEARS OLD.

1st, G. W. Clemans, St. George, "Worthemall," 456.
2nd, McDuffee & Butters, Stanstead, Que., "Porcelain of Pine Grove 2nd," 25514.
3rd, McDuffee & Butters, Stanstead, Que., "Aggie Flora 7th," 25501.

HEIFER, 2 YEARS OLD.

1st, W. G. Ellis, Bedford Park, "Rideauellah," 2646.
2nd, Smith Bros., Churchville, "Lillie Teusen Mink Mercedes," 134.
3rd, A. C. Hallman & Co., New Dundee, "Netherland Queen," 380.

HEIFER, 1 YEAR OLD.

1st, R. S. Stevenson, Ancaster, "Modest Girl 4th," 693.
2nd, A. C. Hallman & Co., New Dundee, "Lareno," 457.
3rd, A. C. Hallman & Co., New Dundee, "Evelina," 381.

HEIFER CALF, UNDER 1 YEAR.

1st, A. C. Hallman & Co., New Dundee, "Anna Bella."
2nd, McDuffee & Butters, Stanstead, Que.
3rd, Smith Bros., Churchville, "Siepkjes Tirannia Castine Queen," 733.

HERD, CONSISTING OF ONE BULL AND FOUR FEMALES OVER 1 YEAR OLD, OWNED BY EXHIBITOR.

1st, McDuffee & Butters, Stanstead, Que.
2nd, A. C. Hallman & Co., New Dundee.
3rd, Smith Bros., Churchville.

BULL AND FOUR OF HIS PROGENY, ANY AGE, OWNED BY EXHIBITOR.

1st, McDuffee & Butters, Stanstead, Que.

FEMALE ANY AGE.

Smith Bros , Churchville, "Cornelia Teusen," 22.

PRIZE AWARDS FOR HORSES AND CATTLE AT THE INDUSTRIAL EXHIBITION HELD AT TORONTO IN 1894.

HORSES.

THOROUGHBREDS.

STALLION, 4 YEARS OLD AND UPWARDS.

1st, Brown & Gilkinson, Brampton, "Woodburn": sire, King Alphonso; dam, Molly Wood, etc.
2nd, Alex. Holmes, Beachville, "Pillarist": sire, Trappist; dam, Prilomela.
3rd, Harris & Walsh, Woodbridge, "Regent": sire, Statesman; dam, The Orphan.

STALLION, 4 YEARS OLD AND UPWARDS, BEST CALCULATED TO PRODUCE HUNTERS AND SADDLE HORSES.

1st, Fred. Rowe, Belmont, "Norwegian 351"; sire, Peregrine; dam, Stratimic.
2nd, C. P. Geary, St. Thomas, "Mount Eagle"; sire, Joe Davis; dam, Highland Girl, etc.

STALLION, 2 YEARS OLD.

1st, Thos. Irving, Winchester, "St. James": sire, Downey Bird; dam, Snip.
2nd, A. Frank & Sons, The Grange, "Button": sire, Marquis; dam, Jenny Lind.
3rd, John Dyment, Orkney, "Orkney": sire, King Bob; dam, Aunt Alice.

YEARLING COLT, ENTIRE.

1st, Robert Davies, Toronto, "Phaeton": sire, Victor Chief; dam, Aurora.
2nd, Robert Davies, Toronto, "Chester"; sire, Esterling; dam, Lady Gwendoline.
3rd, John Dyment, Orkney, "Brown Dick"; sire, Dandy Dinmont; dam, Aunt Alice.

STALLION, OF ANY AGE.

Brown & Gilkinson, Brampton, "Woodburn." See above.

MARE OR GELDING, 4 YEARS OLD AND UPWARDS.

1st, Robert Davies, Toronto, "Beehive": sire, Clifton; dam, Boebird.
2nd, John Dyment, Orkney, "Aunt Alice": sire, Terror; dam, Ada.
3rd, F. A. Campbell, V. S., Toronto, "Max"; sire, The Jacobite; dam, Veracity.

FILLY, 3 YEARS OLD.

1st, Robert Davies, Toronto, "Lotis"; sire, Trapeze; dam, Taormina.
2nd, A. E. Dyment, Orkney, "May Blossom": sire, King Bob; dam, Maggie May.
3rd, A. Frank & Son, The Grange, "Little Pussy"; sire, Marquis; dam, Lady Harper.

FILLY, 2 YEARS OLD.

1st, John Dyment, Orkney, "Barbara": sire, King Bob; dam, Lucy Lightfoot.
2nd, J. W. Murray, Toronto, "Cassey"; sire, Billito; dam, Mamie Long.

YEARLING, FILLY OR GELDING.

1st, John Dyment, Orkney, "Imp. Filly": sire, Albert Esterling: dam, Light Heart.
2nd, Robert Davies, Toronto, "Kerrona."
3rd, Robert Davies, Toronto, "Discord."

BROOD MARE WITH FOAL BY HER SIDE.

1st, Robert Davies, Toronto, "Thistle Colt." See above.

BEST MARE, ANY AGE.

Robert Davies, Toronto, "Beehive." See above.

ROADSTERS.

STALLION, 4 YEARS OLD AND UPWARDS, NOT LESS THAN 15 HANDS.

1st, H. Cargill & Son, Cargill, "Gen. Jackson": sire, Royal Leopard; dam, Priam.
2nd, G. W. Langs, Round Plains, "Tom Collins."
3rd, John Cherry, Carleton, "Wilmot": sire, Wilton; dam, Maggie Patchen.
4th, Cedars Breeding Stables, Bedford Park, "Honest Wilkes"; sire, Hambletonian Wilkes; dam, Mag Lock.
5th, A. Proctor, Woodbine Club House, Toronto, "Big Ben"; sire, Confederate Chief.

STALLION, 3 YEARS OLD.

1st, John McBride, Newtonbrook, "Tony Wilkes"; dam by Highland Boy.
2nd, G. W. Langs, Round Plains, "Alvin A."; sire, Alvin; dam, by Prince of Wales.
3rd, W. H. Snow, Toronto, "Young Stranger": sire, Annex; dam, Belwood.
4th, Geo. H. Hastings, Toronto, "Black Prince"; sire, Young Nobleman; dam, Betty.

STALLION, 2 YEARS OLD.

1st, H. E. Stoddart, Bradford, "Regulator."
2nd, Simon Fraser, Toronto, "Abdallah Stanton": sire, Belmont Star; dam, Dolly Stanton.
3rd, Simon Shunk, Woodbridge, "Aleck Stanton"; sire, Frank Ellis; dam, Lady Stanton.
4th, Cedars Breeding Stables, Bedford Park, "Banker Boy"; sire, Honest Wilkes; dam, Lady Banker.

YEARLING COLT, ENTIRE.

1st, R. M. Wilson, Delhi, "Charley Duval"; sire, Shadeland Duval 15745; dam, Daisy Patchen.
2nd, Cedars Breeding Stables, Bedford Park, "Wilkes Boy"; sire, Honest Wilkes; dam, by Clear Grit.

STALLION OF ANY AGE.

H. Cargill, Cargill, "Gen. Jackson." See above.

GELDING OR FILLY, 3 YEARS OLD.

1st, A. Proctor, Woodbine Club House, Toronto, "Bell W"; sire, Ben Morrell, jr.; dam, by Royal George.
2nd, Cedars Breeding Stables, Bedford Park, "Queenie Wilkes", sire, Honest Wilkes; dam, Lady Banker.
3rd, Alex. Ross, Toronto, "Minnie"; sire, Little Hamilton; dam, by Whistle Jacket.
4th, Joseph Lawson, Brampton, "Nellie"; sire, Crown Imperial; dam, Bessy.

GELDING OR FILLY, 2 YEARS OLD.

1st, Joseph Lawson, Brampton, "Maud"; sire, Marquis; dam, Bessy.
2nd, Dr. Aikens, Toronto, ; sire, Belmont Star; dam, by Almonte.
3rd, W. R. Brown, Maplewood, "Topsy"; sire, Zorra Boy; dam, by Gold Dust.
4th, Eli Dolson, Alloa, "Bonnie": sire, Forest Mambrino; dam, Almonte.

Yearling Gelding or Filly.

1st, H. G. Boag, Queensville, "Lady Lavender"; sire, Lavender; dam,
2nd, R. M. Wilson, Delhi, "Ardellice"; sire, Shade of Duval; dam, Dell.
3rd, Mrs. S. Fraser, Toronto, ; sire, Rio Grande; dam, Dolly Stanton.
4th, Geo. Jackson & Son, Downsview. ; sire, Little Hamilton; dam, Bonnie Almonte.

Brood Mare, with Foal of Same Breed by Her Side, Not Less than 15½ Hands.

1st, R. M. Wilson, Delhi, "Daisy Patchen"; sire, Hiram Happy; dam, Dell.
2nd, Harris & Walsh, Woodbridge, "Lady Bonner": sire, Rob Bonner, jr.; dam, Lady Walkill.
3rd, James Tilt, Derry West, "Nellie T"; sire, Clear Grit; dam, Nellie T.
4th, John McBride, Newtonbrook, "Lizzie D"; sire, Highland Boy; dam, by Willie Douglas.

Foal of 1894.

1st, Harris & Walsh, Woodbridge.
2nd, John McBride, Newtonbrook, "Mountaineer"; sire, Algernon; dam, by Highland Boy.
3rd, Eli Dolson, Alloa, "Belmont": sire, Belmont Star; dam, by Messenger.
4th, R. M. Wilson, Delhi, "Hazlewood"; sire, Shadeland Duval 15754; dam, Daisy Patchen.

Pair Matched Horses (Geldings or Mares) in Harness, 16 Hands and Under, and Over 15½ Hands.

1st, J. L. Clark, Brampton, "Tony and Fosca": sire, Porter's Hambletonian; dam, Boston.

Pair Matched Horses (Geldings or Mares) in Harness, 15½ Hands and Under.

1st, H. Cargill & Son, Cargill... { "Sunol"; sire, Gen. Jackson; dam, Josephine.
"Cricket"; sire, Gen. Jackson; dam, Daisy.
2nd, G. W. Decker, Pickering.. { "Dr. Fancy": sire, Gen. Brock; dam, Whirlwind.
"Kitty Mutton"; sire, Billy T; dam, by Heir at Law.
3rd, W. R. Brown, Maplewood, "Maud T and Molly B"; sire, Zorra Boy; dam, by Old Clear Gri
4th, Wood Freeman, Freeman.. { "Kitty F": sire, Victor H; dam, by Clear Grit.
"Minnie F": sire, William Cligg; dam, by Clear Grit.
5th, Hugh Turnbull, Preston.... { "Beauty M": sire, Stanton, jr.; dam Nance, by Harper.
"Dolly T"; sire, Stanton, jr.; dam Rose, by Sharpcatcher.

Single Horse (Gelding or Mare) in Harness, 16 Hands and Under, and Over 15 Hands.

1st, E. Taylor, Toronto, "Jolly"; sire, Mambrino Sothan; dam, by Rifleman.
2nd, J. D. Orr, Meadowville, "Dolly Orr"; sire, Clear Grit; dam, Dolly Orr.
3rd, J. H. Hillock, Brampton. ; sire, Cyclone; dam, Lady Prize.
4th, J. L. Clark, Brampton, "Fashion" sire, Crown Imperial; dam, by Royal George.
5th, Alex. Arthurs, Brampton, "Nell": sire, John Miller.

Single Horse (Gelding or Mare) in Harness, 15½ Hands and Under.

1st, F. Parsons, Freeman.
2nd, Thos. Bowes, Oakwood, "Bay Mare": sire, Bay George; dam, Longstreet.
3rd, J. J. Burns, Toronto, "Clara K."; sire, Clarion Chief; dam, by Jack the Barber, etc.
4th, Thos. Aikins, Mt. Charles, "Katie C."

Best Mare of any Age.

Thos. Aikins, Mt. Charles, "Katie C."

STANDARD BRED TROTTERS.

Stallion, 4 Years Old and Upwards, Not Less than 15½ Hands.

1st, Dorsey Little, Winnipeg, "Bourbonnais; sire, Bourbon Wilkes; dam, Lady Almonte, etc.
2nd, Henry Zilliax, Elmira.
3rd, Geo. Curtis, Woodbine Club House, Toronto, "Canadian Star"; sire, Tontine; dam, Nellie Dewar, etc.

Stallion, 3 Years Old

1st, Lorne Stock Farm, West Lorne, "Dr. Ling," 16523; sire, Solitaire, 5859; dam, Susie Rowell, etc.
2nd, H. Cargill & Son, Cargill, "Toletto," 16954; sire, Damo, 4366; dam, Betsy, etc.

STALLION, 2 YEARS OLD.

1st, J. MacKerrow, Toronto, "Shikinah," 23868; sire, Sydney, 4770; dam, Bessie Browne, etc.
2nd, Geo. Jackson & Son, Downsview, "Sylviego," 24875; sire, Egotist, 5018; dam, Sylvia, etc.
3rd, Hugh Smith, Claude, "Brown Tasker," 23748; sire, Tasker, 16045; dam, Brownie, etc.

YEARLING COLT, ENTIRE.

1st, Hugh Smith, Claude, "Uncle Bob"; sire, Wild Brino; dam, Brownie, etc.
2nd, Lorne Stock Farm, West Lorne, "Jingle Bells"; sire, Solitaire, 5859; dam, Susie Rowell, etc.

STALLION OF ANY AGE.

Dorsey & Little, Winnipeg, "Bourbonnais." See above.

GELDING OR FILLY, 2 YEARS OLD.

1st, Benj. Martin, Binbrook, "Edna Wilkes"; sire, Almonte Wilkes, 11242; dam, Martina Scott, etc.
2nd, Henry Zilliax, Elmira, "Elmira Girl"; sire, O. K., 10647; dam, Zilliax Maid.
3rd, Benj. Martin, Binbrook, "Mildred Wilkes"; sire, Almonte Wilkes; dam, Binbrook Maid, etc.

YEARLING GELDING OR FILLY.

1st, Benj. Martin, Binbrook, "Vivian Wilkes"; sire, Almonte Wilkes; dam, Binbrook Maid, etc.
2nd, D. H. Charles, Woodstock, "Donna Alto"; sire, Sunny Alto; dam, Miss Sterling, etc.

BROOD MARE, WITH FOAL OF SAME BREED BY HER SIDE.

1st, D. H. Charles, Woodstock, "Miss Sterling," by Twilight.
2nd, Hugh Smith, Claude, "Brownie"; sire, General Brock, dam, Birdie, etc.
3rd, Benj. Martin, Binbrook, "Binbrook Maid"; sire, Highland Boy; dam, Winfield Scott, etc.

FOAL OF 1894.

1st, Hugh Smith, Claude, "Bonnie Scott"; sire, Wiry Jim; dam, Brownie, etc.
2nd, D. H. Charles, Woodstock, "Brook Alto"; sire, Sunny Alto; dam, Miss Sterling, etc.
3rd, H. W. Sunley, Ridgetown, "   "; sire by Ben L., 15166; dam, Biddy Donovan, etc.

PAIR MATCHED HORSES (GELDINGS OR MARES) IN HARNESS.

1st, R. Vernon, Toronto, "Orpha C." 15264; sire, O.A.C., 2072; dam by Chicago Volunteer, 2611, etc; "Essa C.," 15263; sire, O.A.C., 2072; dam by Chicago Volunteer, 2611, etc.
2nd, Cedars' Breeding Stables, Bedford Park, "Ollie and Mate"; sire, Oliver W.

SINGLE HORSE (GELDING OR MARE) IN HARNESS.

1st, Cedars' Breeding Stables, Bedford Park, "Ollie"; sire, Oliver W.; dam, Mayflower, etc.
2nd, Geo. Jackson & Son, Downsview, "Mollie Brock"; sire, Gen. Brock; dam, Mattie, etc.
3rd, H. W. Sunley, Ridgetown.

BEST MARE OF ANY AGE.

D. H. Charles, Woodstock, "Miss Sterling." See above.

CARRIAGE HORSES.

STALLION 4 YEARS OLD AND UPWARDS, 16¼ HANDS AND OVER.

1st, George Cockburn, Baltimore, "Ludwig"; sire, August; dam, Minnie, etc.
2nd, German Coach Horse Co., Milton, "Picador"; sire, Ardo; dam, Piquadame, etc.
3rd, Jos. Mannarey, Goring, "Prince Arthur"; sire, Prince Victor; dam, Countess of Wilton, etc.
4th, Thos. Irving, Winchester, "Igmanthorp Forester II"; sire, Baron Rothesay; dam, Flora, etc.

STALLION, 3 YEARS OLD.

1st, P. D. Stotts, Blythewood, "Royal Prince"; sire, Prince Alexander; dam, Jean, etc.
2nd, C. H. Blanshard, Appleby, "Terrington Boy"; sire, Inkerman; dam, Lady, etc.

STALLION, 2 YEARS OLD.

1st, John L. Reed, Milton, "Salesman Boy": sire, Shining Light; dam, Future, etc.
2nd, A. P. Tully, Summerstown, "Frank": sire, Charlie.

YEARLING COLT, ENTIRE.

1st, Graham Bros., Claremont, "Firefly": sire, Firefly.
2nd, W. C. Brown, Meadowvale, "Prince George": sire, Prince Victor; dam, Hatty Bell, etc.
3rd, R. M. Wilson, Delhi, "Billy": sire, Wunterich; dam, Daisy, etc.

STALLION OF ANY AGE.

Graham Bros., Claremont, "Firefly." See above.

PAIR MATCHED CARRIAGE HORSES (MARES OR GELDINGS) NOT LESS THAN 16½ HANDS.

1st, Jas. S. Gray, Chatham.
2nd, Thos. Brownridge, Brampton.
3rd, Charles Brown, Toronto, "Bob and Joe"; sire, Whistle Jacket; dam, by Lord Byron, etc.
4th, A. B. G. Tisdale, Brantford.

PAIR MATCHED CARRIAGE HORSES, NOT LESS THAN 15¾, AND UNDER 16½ HANDS.

1st, D. H. Grand & Co., East Buffalo.
2nd, Thos. Brownridge, Brampton.
3rd, Quinn Bros., Brampton.
4th, R. M. Wilson, Delhi, "Nellie and Lucy"; sire, Stanton; dam, Roxy, etc.

GELDING OR FILLY, 3 YEARS OLD.

1st, Robt. Davies, Toronto, "Intora"; sire, Belloto, 959; dam, Kuchenmadchen, 3636, etc.
2nd, W. Brownridge, Ashgrove, "Fred," by Shining Light.
3rd, Matthew Howson, Ashgrove, "Felo," by Shining Light.

GELDING OR FILLY, 2 YEARS OLD.

1st, Matthew Howson, Ashgrove, "Gertie," by Shining Light.
2nd, R. M. Wilson, Delhi, "Dick"; sire, Howson; dam, Nellie, etc.
3rd, R. M. Wilson, Delhi, "Beatrice": sire, Wunterich; dam, Lucy, etc.

YEARLING GELDING OR FILLY.

1st, Matthew Howson, Ashgrove, "Lady Flyte," by Shining Light.
2nd, C. D. Smith, Fairfield Plains.
3rd, R. M. Wilson, Delhi, "Blackbird"; sire, Wunterich; dam, Nelly, etc.

BROOD MARE, 16 HANDS AND OVER WITH FOAL OF SAME BREED BY HER SIDE.

1st, Robt. Davies, Toronto, "Hirse," 395; sire, Hedder's Fago, 834; dam, Uganda, 3619, etc.
2nd, R. M. Wilson, Delhi, "Daisy"; sire, Stanton; dam, Maud, etc.
3rd, C. M. Noble, Cooksville, "Jennie C."

FOAL OF 1894.

1st, W. J. Thompson, Orkney, "Sir Oliver."
2nd, John T. Fuller, Alloa, "Dexter": sire, Lexington; dam, Hambletonian, etc.
3rd, R. M. Wilson, Delhi, "Flora": sire, Wunterich; dam, Daisy, etc.

SINGLE CARRIAGE HORSE (GELDING OR MARE) IN HARNESS, 15¾ TO 16½ HANDS.

1st, Geo. Broddy, Brampton.
2nd, D. H. Grand & Co., East Buffalo.
3rd, James McQueen, Elora, "Bella Cora": sire, Gen. Cleveland; dam, Revenge, etc.
4th, A. H. VanHorn, Waterford, "Queen Bess."

SINGLE CARRIAGE HORSE (GELDING OR MARE) IN HARNESS, NOT LESS THAN 16½ HANDS.

1st, W. C. Short, Salem, "Lulu"; sire, Clear Grit; dam, by Jack the Barber.
2nd, F. J. Scott, Birr, "Grant."

3rd, J. F. & A. R. Vansickle, Jerseyville, “Nelly Scott”; sire, Harry Scott; dam, Nelly C, etc.
4th, Wm. Storey, Milton, “Gen. Storey ; sire, King Fairfield, 35 ; dam, Jennie, etc.

Best Mare, any Age.

D. H. Grand & Co., East Buffalo.

CLYDESDALES.

Stallion, 4 Years Old and Upwards.

1st, Graham Bros., Claremont, Ont., “Queen's Own” (imp.) [1708] (7176) ; dark bay, stripe on face, nigh hind foot white, tip on off fore foot ; foaled May, 1885 ; bred by William Craig, Buchley, Maryhill, Scot. ; imported 1891 by exhibitors ; sire, Prince of Wales (673) ; dam, Buckley Kate (1142), by Paisley Jock (581), etc.
2nd, Vance & Eby, Shakespeare, “Golden Crown” (imp. in dam) [1530] ; bay, stripe on face, nigh fore and hind legs white ; foaled June 27th, 1889 ; bred by William Hood, Chapelton, Kirkcudbright, Scot. ; imported in dam by D. & O. Sorby, Guelph ; sire, Silver Twist (5348) ; dam, Lady Alison (imp.) [1459], by Belted Knight (1395), etc.
3rd, D. & O. Sorby, Guelph, Ont., “Bold Boy” (imp.) [1149] (4257) ; bay, white face and legs ; foaled May 13th, 1884 ; bred by John Marr, Cairnbrogie, Old Meldrum, Aberdeenshire, Scot. ; imported in 1889 by exhibitors ; sire, Lord Erskine (1744) ; dam, Lalla Rookh (3757), by General (323), etc.

Stallion, 3 Years Old.

1st, John Vipond, Brooklin, Ont., “Erskine Style” [2121] ; bay, ratch on face and off hind pastern white; foaled in May, 1891 ; bred by exhibitor ; sire, Erskine (imp.) [1652] (4986) ; dam, Brooklin Metal (imp.) [1877] (11166), by Farmer's Boy (2097), etc.
2nd, Peter & Alex. Holmes, Beachville, Ont., “Millrig Stamp” (imp.) [2122] (9617); brown, stripe on face, spot on belly, white feet ; foaled 1891 ; bred by John Wilson, Millrigg, Skelmorlie, Scot.; imported by exhibitors ; sire, MacNeil (4566) ; dam, Maggie of the Hall (4274), by Prince of Wales (666), etc.

Stallion, 2 Years Old.

1st, James Snell, Clinton, “Hullett's Pride” [1981] ; bay, stripe on face, hind legs white ; foaled April 18th, 1892 ; bred by exhibitor ; sire, Andrew Lammie (imp.) [1114] (6433); dam, Gipsy Queen (imp.) [993], by Crossburn (2707), etc.
2nd, S. J. Prouse, Ingersoll, Ont., “Roslin” (imp.) [2124] (9839) ; bay, white ratch on face, little white on near fore foot and off hind leg ; foaled May, 1892 ; bred by Wm. Mackie, Colston, Bishopbriggs, Scot. ; imported 1893 by exhibitor ; sire, Rosedale (8194) ; dam, Mary of Finnich (6453), by Pride of Endrick (3069), etc.

Yearling Colt, Entire.

1st, Graham Bros., Claremont, “Symmetry II.” [2091] ; bay, stripe on face, hind legs and near fore pastern white ; foaled April 16th, 1893 ; bred by exhibitors ; sire, Symmetry (imp.) [1713] (9431) ; dam, Nelly (imp.) [970], by Laird of Bute (4490), etc.

Clydesdale Stallion, Any age.

Graham Bros., Claremont, “Queen's Own” (imp.) See above.

Filly, 3 Years Old.

1st, Robert Davies, Toronto, “Pride of Thorncliffe” (imp. in dam) [1937] ; bay, stripe on face, hind legs white ; foaled April, 1891 ; bred by Major L. D. Gordon-Duff, Drummuir, Keith, Scot. ; imported in dam, August, 1890, by Graham Bros., Claremont, Ont ; sire, Lord Montrose (7973) ; dam, Pride of Drummuir (imp.) [1325], by Culloden (5684), etc.
2nd, Robert Davies, Toronto, “Lady Thorncliffe” (imp. in dam) [1937] ; light bay, stripe on face; foaled April, 1891 ; bred by Wm. Kerr, Bendeath, Stirling, Scotland ; imported in dam, August, 1890, by Graham Bros., Claremont, Ont. ; sire, Carruchan Stamp (5627) ; dam, Lady Dunmore (imp.) [1321], by Earl Grange (4350), etc.

Filly, 2 Years Old.

1st, Graham Bros., Claremont, “Lady Almondale” [1916]; light bay, stripe on face, off hind foot white ; foaled April 17th, 1892 ; bred by exhibitors ; sire, International (imp.) [1423] (6853); dam, Miss Weir (imp.) [1653], by Almondale (4223), etc.
2nd, Graham Bros., Claremont, “Lady Flashwood” [1915]; bay, narrow ratch on face, hind legs white ; foaled April 24th, 1892 ; bred by exhibitors ; sire, International (imp.) [1423] (6853) ; dam, Effie Macgregor (imp.) [1914], by Macgregor (1487), etc.

YEARLING FILLY OR GELDING.

1st, S. J. Prouse, Ingersoll, " Kate " ; sire, Lord Munnida ; dam, Jean of Greenhill.
2nd, R. Davies, Toronto, " Belle of Thorncliffe " ; sire, Energy (7691) ; dam, Bessie Belle (7834).

BROOD MARE WITH FOAL OF SAME BREED BY HER SIDE.

1st, Robt. Davies, Todmorden, " Edith " (imp.) [1322] ; brown, star on face, white on hind feet : foaled May, 1888 ; imported, 1890 ; bred by John Mark, Craigend, Stow, Scot. ; sire, Lord Lyndoch (4530); dam, Rosy of Rosyth (9537), by Culvennan Chief (2710), etc.
2nd, Robt. Davies, Todmorden, " Candour " (imp.) [1646] ; brown, star on forehead, hind legs white ; foaled May 4th, 1890; bred by J. Williamson, Langlands, Kirkcudbright, Scot.; imported in 1891 by Graham Bros , Claremont, Ont. ; sire, Macgregor (1487) ; dam, Darling (5148), by Farmer (288), etc.
3rd, Jas. I. Davidson & Son, Balsam, " Boydston Lass " [1920] (2328) ; bay, small ratch on face, hind feet white : foaled June 29th, 1883 ; bred by W. M. Miller, Claremont ; sire, Boydston Boy (imp.) [216] 1872 (111) ; dam, Bell (imp.) [617] 169 (519), by Prince of Renfrew (664), etc.

FOAL OF 1894.

1st, J. I. Davidson & Son, Balsam, " Boydston Stamp ; sire, Westfield Stamp (9467) ; dam, Boydston Lass (2328).
2nd, Graham Bros., Claremont, " Queen Effie " ; sire, Queen's Own (7176) ; dam, Effie Macgregor [1914].
3rd, Robt. Davies, Toronto. " Edith Colt " ; sire, Energy (7691) ; dam, Edith [1322].

MARE WITH TWO OF HER PROGENY.

1st, Graham Bros., Claremont, " Effie Macgregor" (imp.) [1914] ; brown, stripe on face, hind legs white ; foaled June 3rd, 1888 ; bred by James Finlay, Ross, Borgue, Kirkcudbright, Scot.; imported in 1890 by exhibitors ; sire, Macgregor (1487) ; dam, Lily (3471), by Prince Imperial (1258), etc.

SPAN OF CLYDESDALES (GELDINGS OR MARES).

1st, D. & O. Sorby, Guelph, " Sunbeam of Cults " (imp.) [1925] ; bay, ratch on face, white legs ; foaled May 21st, 1890 ; bred by Ferguson & Menzies, Cults, Castle Kennedy, Stranraer, Scot. ; imported August, 1891, by exhibitors ; sire, Henry Irving of Drumflower (4440) ; dam, Mabel of Cults (7221), by Darnley (222), etc.
" Boydston Lass 4th " [1921] 6334 ; black, white face, hind legs white : foaled March 31st. 1891 ; bred by exhibitors ; sire, Lewie Gordon (imp) [1602] (7918) ; dam, Boydston Lass [1920] (2388), by Boydston Boy (imp.) [216] 1872 (111), etc.
2nd, Wm. Foster & Son, Humber.

BEST MARE OF ANY AGE.

Robt. Davies, Toronto, "Pride of Thorncliffe" (imp.) See above.

SPECIAL CHAMPIONSHIP PRIZE FOR CLYDESDALES – BEST CANADIAN BRED CLYDESDALE MARE, ANY AGE, RECORDED IN THE CLYDESDALE STUD BOOK OF CANADA.

Robt. Davies, Toronto, " Pride of Thorncliffe " (imp. in dam). See above.

ENGLISH SHIRES.

STALLION 4 YEARS OLD AND UPWARDS.

1st, Morris, Stone & Wellington, Welland, "Pride of Hatfield " (imp.) [256] ; bay, stripe on face and three white legs ; foaled in 1890 ; bred by George Smales, Gowdall, Selby, Yorkshire, Eng. ; imported in 1894 by exhibitors ; sire, Lincolnshire Lad 2nd (1365) ; dam, Flower, by Gay Lad, etc.
2nd, Jas. Gardhouse & Son, Highfield, " Garfield II." (imp) [138] (2786) ; bay, three white heels and face; foaled in 1881 ; bred by T. Cornell, Preston, Lancashire, Eng. ; sire, What's Wanted (2332) ; dam, Darby, by Paragon, etc
3rd, William Mullin, Hillsburg, "Cock Robin " (imp. in dam) [245] ; chestnut, stripe on face, three white legs, one white foot ; foaled April 31st, 1890 ; bred by John Whatmough, Ridgeway, Sheffield, Eng : imported in dam July, 1889, by Ormsby & Chapman, Springfield-on-Credit ; sire, Game Cock (7252); dam, Leake Polly (imp.) [61], by Monster (2846), etc.

STALLION, 2 YEARS OLD.

1st, Jas. Gardhouse & Son, " Duke of Blagdon" (imp.) [257] ; bay, dark points ; foaled 1892 ; bred by Clement Keevil, New Maiden, Surrey, Eng.; imported 1893 by exhibitors ; sire, Blagdon Lincoln (12797) ; dam, Blagdon Brunette, by Lincolnshire Lad 2nd, etc.
2nd, Morris, Stone & Wellington, Welland, " Frederick William " [246] bay, star on face, off fore foot white, and white on hind legs ; foaled 1892 ; bred by exhibitors ; sire, Prince Charles [196] ; dam, Elsie Morin (imp.), by Welton Tom (3395), etc.

Stallion, any Age.

Morris, Stone & Wellington, Welland, "Pride of Hatfield" (imp.). See above.

Filly, 3 Years Old.

1st, Alex. Doherty, Ellsmere, "Flossy" (88); bay, dark points: foaled June, 1891; bred by Walter Glendenning, Ellsmere; sire, King of the Castle [71] (3171); dam, Topsy (imp.) [52], by King of the Valley (1248), etc.

2nd, Morris, Stone & Wellington, Welland, "Daisy" [82]; brown, white on face, hind feet white; foaled 1891; bred by exhibitors; sire, Chieftain [194] (5723); dam, Elsie Morin (imp.) [34], by Welton Tom (3395), etc

3rd, Morris, Stone & Wellington, Welland, "Pearl of Welland" [100]; bay, white face, white on hind legs; foaled May, 1891; bred by exhibitors; sire, Chieftian II. [194] (5723); dam, Lottie [35], by Adam [65], etc.

Filly, 2 Years Old.

1st, Morris, Stone & Wellington, Welland, "Bridget" [92]; bay, two white hind stockings, nigh fore foot white, star on forehead, white on nose; foaled 1892; bred by exhibitors; sire, Prince Charles [196]; dam, Lottie [35], by Adam [65], etc.

2nd, Morris, Stone & Wellington, Welland, "Beatrice" (imp.) [97]; bay, star on forehead, three white feet; foaled 1892; bred by Walter Johnson, Hatfield, Doncaster, York, Eng; imported 1894 by exhibitors; sire, Engineer II. (9300); dam, Madam Brown (6646), by Royal Albert, Jr. (8110), etc.

3rd, H. N. Crossley, Rosseau, "Rosseau Queen" (imp.) [98]; bay, two white fetlocks; foaled 1892; bred by John Thomas Brown, Althorpe, Doncaster, Eng.; imported 1894, by exhibitors; sire, Trent Conqueror (12573); dam, Althorpe Excelsior, by Royal Albert (1885), etc.

Yearling Filly or Gelding.

1st, H. N. Crossley, Rosseau, "Rosseau Propriety" (imp.) [99]; grey, four black legs; foaled 1893; bred by John Thomas Browne, Doncaster, Yorkshire, Eng.; imported 1894 by exhibitor; sire, St. Highbald (4068); dam, Althorpe Dewdrop, by Sampson V. (4670), etc.

2nd, Morris, Stone & Wellington, Welland, "Leta" [101]; light bay, face white, stockings on hind legs, right front foot white; foaled January, 1893; bred by exhibitors; sire, Chieftain II. [194] (5723); dam, Lancashire Lass [70], by Honest Tom (1105), etc.

3rd, Morris, Stone & Wellington, Welland, "Fanny" (93); brown, star and streak on face, two white hind feet; foaled 1893; bred by exhibitors; sire, Prince Charles [196]; dam, Elsie Morin (imp.) [34], by Welton Tom (3395), etc.

Brood Mare with Foal of Same Breed by Her Side.

1st, Morris, Stone & Wellington, Welland, "Elsie Morin" (imp.) [34]; brown, star on face, white hind foot; foaled 1884; bred by Edward Belton, Tudworth, Yorkshire, Eng.; imported 1886 by exhibitors; sire, Welton Tom (3395); dam, by Red House Boy (1849), etc.

2nd, Wm. Mullin, Hillsburg, "Leake Polly" (imp.) [61]; brown, star on face, black points; foaled 1886; bred by John Whatmough, Sheffield, Eng.; imported July, 1889, by Ormsby & Chapman, Springfield-on-Credit; sire, Monster (2846); dam, Diamond, by Don Carlos (2416), etc.

Foal of 1894.

1st, Morris, Stone & Wellington, Welland, "Victor" [260]; bay, star on face, right hind foot white; foaled June, 1894; bred by exhibitors; sire, Prince Charles [196]; dam, Elsie Morin (imp.) [34], by Welton Tom (3395), etc.

2nd, Wm. Mullin, Hillsburg ——: sire, Packington (7993); dam, Leake Polly [61].

Mare with Two of Her Progeny.

1st, Morris, Stone & Wellington, Welland, "Elsie Morin" (imp.). See above.

Span of Shire Horses (Geldings or Mares).

1st, H. N. Crossley, Rosseau, "Queen of Althorpe" (imp.) [10]; light bay, white on face, two white hind legs, little white on front feet; foaled 1887; bred by John Thomas Browne, Althorpe, Doncaster, Eng.; imported in 1890 by exhibitor; sire, Renown II. (6318); dam, by Roan George.

"Sapphire" (imp.) [79]; light bay, white face, two hind feet white; foaled 1889; bred by J. E. Shaw, Brooklands Farm, Halifax, Eng.; imported in 1891 by exhibitor; sire, Northern King (2635); dam, Jewel, by Master Tom (5202), etc.

HEAVY DRAUGHT HORSES.

STALLION, 4 YEARS OLD AND UPWARDS.

1st, D. & O. Sorby, Guelph, "Prince of Eyre," 1532; sire, Boydston Boy, 111; dam, Jane Eyre, 217, etc.
2nd, John Park, Burgessville, "Gold Cup," 96; sire, Stranraer, 2441; dam, Pay When Ready, 166, etc.
3rd, Devitt & Sons, Floradale, "Douglas McPherson," 1791; sire, McPherson, 3825; dam, Bell, 1755, etc.

STALLION, 3 YEARS OLD.

1st, D. V. Herold, V.S., Tavistock, "Samson," Vol. VIII., 2070.
2nd, J. A. Boag, Queensville, "Blooming Heather," 1983; sire, Macneilage, 2992; dam, Brown Peggie.
3rd, Job White, Ashburn, "Ashburn Hero" (2093), Vol. VIII.

STALLION, 2 YEARS OLD.

1st, Samuel McArthur, Oro Station, "Grand National."
2nd, Wm. Foster & Son, Humber, "Addison"; sire, Macneilage; dam, Lill, etc.

YEARLING COLT, ENTIRE.

1st, Geo. Taylor, Kippen, "Canny Scotchman II.," 393; sire Canny Scotchman; dam, Pay When Ready, 467, etc.

HEAVY DRAUGHT STALLION, ANY AGE.

D. V. Herold, V.S., Tavistock, "Samson." See above.

FILLY, 3 YEARS OLD.

1st, J. I. Davidson & Son, Balsam, "Kate Hill. II.," 1923; sire, Lewis Gordon; dam, Kate Hill, etc.
2nd, H. G. Boag, Queensville, "Lady Edith"; sire, Grand Times; dam, Bonnie B. (326), etc.
3rd, Isaac Devitt & Sons, Floradale, "Nellie McLay": sire, McLay; dam, Isabel, 452, etc.

FILLY, 2 YEARS OLD.

1st, Samuel McArthur, Oro Station, "Belle of Oro Station"; sire, Montrose Chief, 5222; dam, Silver Tail, 120, etc.
2nd, D. & O. Sorby, Guelph, "Boydston Lass V." 1922; sire, Lewis Gordon, 7918; dam, Boydston Lass 1920, etc.
3rd, Wm. Foster & Son, Humber, "Dominion Maid"; sire, Macneilage: dam, Poll, etc.

YEARLING FILLY OR GELDING.

1st, Graham Bros., Claremont, "Queen of Atha"; sire, Queen's Own (7176); dam, Effie Macgregor, 1914, etc.
2nd, Samuel McArthur, Oro Station, "Bonnie Ethel"; sire, Sir Walter, 822; dam, Sunrise, 2068, etc.
3rd, F. B. Fenwick, Coleraine, "Maud"; sire, Castlemore Bob; dam, Belle, etc.

BROOD MARE, WITH FOAL OF THE SAME BREED BY HER SIDE.

1st, F. B. Fenwick, Coleraine, "Bell"; sire, Prince of Kilbride, 1268, etc.
2nd, Samuel McArthur, Oro Station, "Sunrise," 2018; sire, Tannahill, 4745; dam, Lady Dufferin, etc.
3rd, J. J. & S. Kissock, Oro Station, "Sunbeam"; sire, Montrave Chief, etc.

FOAL OF 1894.

1st, J. J. & S. Kissock, Oro Station, "Tannahill, Jr."; sire, Tannahill, 4745, etc.
2nd, Samuel McArthur, Oro Station, "Chief"; sire, Montrose Chief, 5222; dam, Sunrise, 2018, etc.
3rd, Geo. Taylor, Kippen, "Lord Rosebery"; sire, Canny Scotchman, 1945; dam, Countess of Thornpark, etc.

MARE, WITH TWO OF HER PROGENY.

1st, Samuel McArthur, Oro Station, "Sunrise," 2018; sire, Tannahill, 4745; dam, Lady Dufferin, etc.

SPAN OF HEAVY DRAUGHT HORSES (GELDINGS OR MARES).

1st, Hendrie & Co., Toronto, "Marksman," sire Prince Charlie; dam, by Drayman, etc. "Douglas"; sire, McFadden; dam by Scotland's Glory, etc.
2nd, T. L. Meadows, Maplewood, "Lady Pickwick"; sire, Wait-on-Me; dam, Topsy, etc. "Alice"; sire, Wait-on-Me; dam, topsy, etc.
3rd, Kalbfleish & Schafer, Tavistock.

BEST MARE OF ANY AGE.

Samuel McArthur, Oro Station, "Belle of Oro Station." See above.

SUFFOLK PUNCH.

STALLION, 3 YEARS OLD AND UPWARDS.

1st, J. H. Strong, Winchester. "Captain William," 1993; sire, Checkmate, 1566; dam, Smart, 1427, etc.
2nd, Jos. Beck, Thorndale, "Ontario," 2295; sire, Enterprise, 1934; dam, Vanity, 1630, etc.

STALLION, ANY AGE.

J. H. Strong, Winchester, "Captain William." See above.

HACKNEYS.

STALLION, 4 YEARS OLD AND UPWARDS.

1st, R. Beith & Co., Bowmanville, "Jubilee Chief" (imp.)—1—108 (2122); dark brown, four white feet; foaled in 1887; bred by Wm. Martin, Scoreby, Grange Gate, Helmsley, York, Eng.; imported February, 1890, by Robert Kerr, Reaburn, Man.; sire, Pilot (1323); dam, Queen of the Forest (297), by Fireaway (249), etc.
2nd, R. Beith & Co., Bowmanville, "Ottawa" (imp.)—2—; chestnut; foaled in 1890; bred by Wm. Martin, Scoreby Grange, York, Eng.: imported in dam, February, 1890, by Robt. Kerr, Reaburn, Man.: sire, Lord Derwent 2nd; dam, May Flower (imp.)—2—(767), by Highflyer (1648), etc.
3rd, Graham Bros., Claremont, Ont., "Kilnwick Fireaway" (imp.)—5—(3698); bay; foaled in 1890: bred by John T. Elgey, Kilnwick, Pocklington, Eng.; sire, Lord Swanland (1834): dam, Trip, by Tripaway (2296), etc.

STALLION, 3 YEARS OLD.

1st, Hillhurst Farm, Hillhurst, Que., "Hayton Shales" (imp.)—22—; bay, little white on near hind leg; foaled in 1891; bred by Thos. Wardell, Barmby Moor, Yorkshire, Eng.; imported in 1893 by exhibitors; sire, Pioneer (1088); dam, Polly (4559), by Young Fireaway (1367), etc.
2nd, G. H. Hastings, Deer Park, Ont, "Little Duke"; sire, Young Nobleman, 2328; dam, Kate, 249.
3rd, G. H. Hastings, Deer Park, Ont, "Star of Mepal II." (imp.)—29—(4525); chestnut; foaled in 1891: bred by R. Beldam, Witchford, Ely, Eng.; imported by exhibitor; sire, Star of Mepal (1929); dam, Queen of Denmark (4610), by Telegraph (826), etc.

STALLION, 2 YEARS OLD.

1st, R. Beith & Co., Bowmanville, Ont., "Banquo,"—3—; dark bay, star, and four white feet; foaled June, 1892; bred by exhibitor; sire, Jubilee Chief (imp.)—1—(2122); dam, Mona (imp.)—4—by Dictator (1471), etc.
2nd, Hillhurst Farm, Hillhurst, Que., "Royal Dane" (imp.)—11—; bay, star on forehead, white fore feet; foaled May 21st, 1892; bred by J. Richardson, Hayton, Yorkshire, Eng.; imported by exhibitor; sire, Cannyman (2882); dam, Princess Dagmar (imp.)—10—(4590), by Danegelt (174), etc.
3rd, R. Beith & Co., Bowmanville, Ont., "Lord Roseberry 2nd"—4—; brown, white off fore foot; foaled in April, 1892; bred by exhibitors; sire, Jubilee Chief—1—(2122); dam, Florence—3—(661), by Randolph (1123), etc.

YEARLING COLT, ENTIRE.

1st, H. N. Crossley, Rosseau, "Rosseau Reformer" (imp.)—34—; chestnut roan; foaled in 1893; bred by John T. Browne, Althorpe, Doncaster, Yorkshire, Eng.; imported by exhibitor; sire, Enthorpe Performer (2973); dam, Fanny (111), by Phenomenon, etc.
2nd, Hillhurst Farm, Hillhurst, Que., "Donnacana"—37—; chestnut, four white feet; foaled May, 1893; bred by Hon. M. H. Cochrane, Hillhurst, Que.; sire, Danesfort (imp.)—12—(3535); dam, Gavotte (imp.)—28—(3845), by Fordham (imp.)—36—(287), etc.

STALLION, ANY AGE.

R. Beith & Co., Bowmanville, "Jubilee Chief." See above.

Filly, 3 Years Old.

1st, Graham Bros., Claremont, " Princess, F. S."—6— ; bay, star on forehead, nigh hind pastern, white ; foaled January 13, 1891 ; bred by exhibitors ; sire, Lord Roseberry 2nd—4— ; dam, Kate, by Blue Bull (trotter), etc.

2nd, G. H. Hastings, Deer Park, " Miss Noble "; sire, Young Nobleman (2328) ; grand sire, Confidence (158) ; dam, Vic ; sire, Sir Wormarly.

Filly, 2 Years Old.

1st, Graham Bros., Claremont, " Cherry Ripe " —8—; bay, star on forehead, dark points ; foaled in May, 1892 ; bred by exhibitors ; sire, Seagull (imp.) —8— (2261 ; dam, [Dandy No. 1, F. S], etc.

2nd, Hillhurst Farm, Hillhurst, Que., "Canny Maid" (imp.) —23— ; dark chestnut, white face, off fore foot and hind fetlocks white ; foaled in 1892 ; bred by Geo. N. Stephenson, Good Manham, Market Weighton, Yorkshire, Eng.; imported May, 1893, by exhibitors ; sire, Canny Man (2882) ; dam, Mayflower (765) by Lord Derby II. (417), etc.

3rd, H. N. Crossley, Rosseau, " Althorpe Duchess " (imp.) —21— (6358) ; bay, four black legs ; foaled in 1892 ; bred by John T. Brown, Althorpe, Doncaster, Yorkshire, Eng.; imported by exhibitor ; sire, Caxton (2398) ; dam, Bird in Hand (1018), by Pride (1324), etc.

Yearling Filly.

1st, Hillhurst Farm, Hillhurst, Que., " Matchless Maid " —24— ; bay ; foaled April 30, 1893 ; bred by exhibitors ; sire, Fordham (287) ; dam, Nancy (imp.) —26— (4460), by Matchless of Londesboro' (1517), etc.

2nd, H. N. Crossley, Rosseau, " Rosseau Vanity " (imp.) —22— ; bay ; foaled 1893 ; bred by John Thomas Brown, Althorpe, Doncaster, Yorkshire, Eng.; imported in 1894 by exhibitor ; sire, Connaught (1453) ; dam, Bird in Hand (1018) by Pride (1324), etc.

3rd, G. H. Hastings, Deer Park, Toronto, " Fanny " —33— ; chestnut, star on forehead, two hind ankles white ; foaled in 1893 ; bred by exhibitor ; sire, Lord Bardolph (412) ; dam [Sally —7— F. S.] by Brown Douglass (roadster), etc.

Brood Mare, with Foal of the Same Breed by Her Side.

1st, R Beith & Co., Bowmanville, "Lady Aberdeen" (imp. in dam.)—5— ; brown ; foaled May, 1890 ; bred by William Martin, Scoreby, Grange Gate, York, Eng.; imported in dam, 1890, by Robt. Kerr, Reaburn, Man.; sire, Lord Derwent 2nd (1034) ; dam, Florence (imp.) —3— (661), by Randolph (1123), etc.

2nd, Hillhurst Farm, Hillhurst, Que., "Vina" (imp.) —27— (4853) ; brown, with star ; foaled in 1888 ; bred by Robert Brigden, Millington, Pocklington, Yorkshire, Eng.; imported in 1893 by exhibitors ; sire, Wildfire (1224) ; dam, Lady Millington (2945), by Star of the East (798), etc.

3rd, H. N. Crossley, Rosseau, " Lady Cocking" (imp.) —11— ; chestnut ; foaled in 1883 ; bred by W. F. Cocking, Croule, Doncaster, Yorkshire, Eng.; sire, Royal George (683) ; dam, mare by Achilles (3), etc.

Foal of 1894.

1st, R. Beith & Co., Bowmanville, " Jessica " —25— ; brown, star on forehead, four white feet ; foaled April 10th, 1894 ; bred by exhibitors ; sire, Jubilee Chief (imp.) —1— (2122) ; dam, Mona's Queen (imp.) —4— by Dictator (1471), etc.

2nd, R. Beith & Co., Bowmanville, " Hamlet" —35— ; bay ; foaled June 6th, 1894 ; bred by exhibitors ; sire, Ottawa (imp.) —2— ; dam, Lady Aberdeen (imp.) —5—, by Lord Derwent II. (1034), etc.

3rd, Hillhurst Farm, Hillhurst, Que., " Hillhurst Squire " —38— ; brown ; foaled May 9th, 1894 ; bred by exhibitors ; sire, Hayton Shales (imp.) —22— (4806) ; dam, Vina (imp.) —27— (4853) by Wildfire (1224), etc.

Pair Matched Horses, High Steppers (Mares or Geldings), Not Less than 15¾ Hands.

1st, Adam Beck, London.
2nd, D. H. Grand & Co., East Buffalo.
3rd. D. S. Lowes, Brampton.

Single Horse, High Stepper (Mare or Gelding), Not More than 15¾ Hands.

1st. Hillhurst Farm, Hillhurst, Que., " Miss Baker," 16 (4371).
2nd, Lawrence & Johnson, Milton West, " Mercury ": sire, Ryshawk ; dam by King Tom.
3rd, D. H. Grand & Co., East Buffalo.

Specials for Hackneys—Best Hackney Mare Recorded in the Canadian Hackney Stud Book in Single Harness and Driven to a Dog Cart, Between 14¾ and 15¾ Hands

1st, Hillhurst Farm, Hillhurst, Que., " Miss Baker " (imp) —16— (4371) ; brown, one white foot ; foaled in 1889 ; bred by James Case, Cockthorpe Wells, Norfolk, Eng.; imported in May, 1893, by exhibitors ; sire, Ruby (1342) ; dam, Betsy Baker (1441) by Norfolk Jack (516), etc.

2nd, H. N. Crossley, Rosseau, "Lady Bird" (imp.) —15— (5510); black; foaled in 1889; bred by The Grange, Holme, Yorkshire, Eng.; sire, Superior (1410); dam, Jessie, by Confidence (1265), etc.

3rd, R. Beith & Co., Bowmanville, "Winnifred" (imp. in dam.) —6— 357; dark bay; foaled May, 1890; bred by Robt. Atkinson, Newton-on-Derwent, York, Eng.; imported in dam in 1890 by Robert Kerr, Reaburn, Man.; sire, Wildfire (1224); dam, Lizette (imp.) —1— 2259, by Anconeus (887), etc.

Special Championship Prize for Hackneys—Best Hackney Stallion, any Age, Recorded in the Canadian Hackney Stud Book, with Three of His Progeny, etc.

R. Beith & Co., Bowmanville, "Jubilee Chief" (imp.)—1—(2122). See above.

CATTLE.

SHORTHORNS.

Bull, 4 Years Old and Over.

1st, C. M. Simmons & Quirie, Ivan, "Royal Saxon"=10537=; roan; calved June 14th, 1888; bred by W. J. Biggins, Clinton; got by Excelsior (imp.)=2633=(51233); dam, Matchless 19th=3881=, by Statesman (imp.)=243=(32607), etc.

2nd, Robert Davies, Toronto, "Northern Light."

Bull, 3 Years Old and Under 4.

1st, J. & W. B. Watt, Salem, "Prime Minister" (imp.)=15280= red; calved February 10th, 1891; bred by Wm. Duthie, Collynie, Aberdeen, Scot.; imported by D. D. Wilson, Seaforth; got by Chesterfield (37049); dam, Princess Lovely, by Field Marshal (47870), etc.

2nd, G. & W. Gier, Grand Valley, "Gold Finder"=15943=; roan; calved June 20th, 1891; bred by J. & W. B. Watt, Salem; got by Barmpton Hero=324=; dam, Minnie 2nd of Lynden=15945=, by Lord Lansdowne (imp.)=2712=(51601), etc.

3rd, James Leask, Taunton, "Gravesend's Hero"=17402=; red; calved March 12th, 1891; bred by Jos. Redmond, Peterborough; got by Gravesend Heir (imp. in dam)=6372=; dam, Mary Lind 2nd (imp.)=11053=, by Goldfinder (47967), etc.

Bull, 2 Years Old and Under 3.

1st, Robt. Davies, Toronto, "Lord Athwaite"; sire, Butterfly Duke 10th; dam, Lady Isabell.

2nd, H. Cargill & Son, Cargill, "Royal Member" (imp.)=17107=(64741); roan; calved April 16th, 1892; bred by estate of S. Campbell, Kinellar, Aberdeen, Scot.; imported September, 1892, by Arthur Johnston, Greenwood; got by Royal James (54972); dam, Nonpareil 32nd, by Borough Member (33186), etc.

3rd, R. & S. Nicholson, Sylvan, "Norseman"=16397=; red; calved September 11th, 1891; bred by Arthur Johnston, Greenwood; got by Indian Chief (imp.)=11108=(57485); dam, Nonpareil of Lenton=15809=, by Baron Lenton (imp.)=1222=(49081), etc.

Bull, 1 Year Old.

1st, John Miller, Markham, "Aberdeen" (imp. in dam)=18949=; red; calved November 20th, 1892; bred by George Campbell, Kinaldie, Aberdeen, Scot.; imported in dam, 1892, by John Isaac, Markham; got by Sittyton Sort (61831): dam, Selina (imp.)=21213=, by Royal James (54972), etc.

2nd, J. & W. B. Watt, Salem, "Canada"=19536=; roan; calved February 6th, 1893; bred by exhibitors; got by Clan Stuart=14381=; dam, Bonny Jean=16593=, by Barmpton Hero=324=, etc.

3rd, James Rennie, Wick, "Valasco 22nd"=18414=; white; calved October 14th, 1892; bred by R. & S. Nicholson, Sylvan; got by Nonpareil Chief=13669=; dam, Vacuna 11th=14038=, by Prince Albert=3669=, etc.

Bull Calf, Under 1 Year.

1st, C. M. Simmons & Quirie, Ivan, "Stranger"=20069=; red; calved November 20th, 1893; bred by C. M. Simmons, Ivan; got by Mina Chief=13670=; dam, Elvira 11th=11616=, by Duke of Gueldres (imp.)=1240=(47740), etc.

2nd, J. I. Davidson & Son, Balsam, "Sittyton Chief 2nd"=20104=; red; calved December 3rd, 1893; bred by exhibitors; got by Sittyton Chief=17060=; dam, Rosamond=13022=, by Royal Barmpton (imp.)=217=(45503), etc.

3rd, J. I. Davidson & Son, Balsam, "Scottish Prince 2nd"=22103=; red; calved November 25th, 1893; bred by exhibitors; got by Scottish Prince=14828=; dam, 40th Duchess of Gloster=23368=, by Hospodar (imp.)=2703=(51409), etc.

4th, Jas. & P. Crerar, Shakespeare, "Favorite"; got by 10th Crown Jewel=16607=; dam, Nettie=14020=.

5th, John Miller, Markham, "Baron Markham"=20067=; red; calved January 8th, 1894; bred by exhibitor; got by Golden Crown (imp.)=17098=; dam, Bashful=18173=, by Hopeful (imp.)=6375=(55902), etc.

BULL OF ANY AGE.

Robt. Davies, Toronto, "Lord Athwaite." See above.

COW, 4 YEARS OLD AND UPWARDS.

1st, J. & W. B. Watt, Salem, "Rugby Vensgarth"=15559= ; dark red ; calved November 29th, 1887 ; bred by Samuel Holman, Columbus ; got by Vensgarth (imp.)=1309=(47192) ; dam, Florence 6th =9152=, by Royal Barmpton (imp.)=217=(45503), etc.

2nd, H. Cargill & Son, Cargill, "Heliotrope 4th"=17145= ; red ; calved August 15th, 1887 ; bred by D'Alton McCarthy, Barrie ; got by Sir Lewis (imp.)=1302=(45614) ; dam, Heliotrope (imp. in dam) =5134=, by Lord Clare (41845), etc.

3rd, H. Cargill & Son, Cargill, "Idlewild"=18275= ; red and little white ; calved December 11th, 1889 ; bred by exhibitors ; got by Albert Victor (imp.)=6315=(55250) ; dam, Rose of Strathallan 4th =14408=, by Captain =2915=, etc.

COW, 3 YEARS OLD.

1st, J. & W. B. Watt, Salem, "Matchless 11th" (Vol. IX.); red and white; calved October 11th, 1890; bred by exhibitors ; got by Barmpton Hero=324= ; dam, Matchless of Elmhurst 2nd=3883=, by Baron Louan 3rd =338=, etc.

2nd, H. Cargill & Son, Cargill, "Myrtle 3rd" got by Royal Blossom (58033) ; dam, Myrtle 2nd (imp.).

3rd, Jas. & P. Crerar, Shakespeare, "Nonpareil Prize"=18810= ; white ; calved January 16th, 1891 ; bred by Arthur Johnston, Greenwood ; got by Indian Chief (imp.)=11108=(57485); dam, Nonpareil of Kinellar (imp.)=8314=, by Luminary (34715), etc.

HEIFER, 2 YEARS OLD.

1st, H. Cargill & Son, Cargill, "Glammis Gentle"=22024=; red ; calved January 1st, 1892 ; bred by E. E. Cooper, Oshawa; got by Beadle=12908=; dam, Lady Glammis=9498=, by Lord Glammis (imp.) =1268=(48192), etc.

2nd, D. D. Wilson, Seaforth, "Missie 142nd" ; got by Sea King (61769) ; dam, Missie 88th (imp.).

3rd, J. & W. B. Watt, Salem, "Matchless 14th"=24751= ; dark roan ; calved October 22nd, 1891 ; bred by exhibitors ; got by Barmpton Hero=324= ; dam, Matchless of Elmhurst 5th=3885=, by Baron Louan 3rd =338=, etc.

HEIFER, 1 YEAR OLD.

1st, J. I. Davidson & Son, Balsam, "Village Beauty 5th"; sire, Hospodar, 51409 ; dam, Village Beauty 3rd, 16138.

2nd, J. & W. B. Watt, Salem, "Mysie 45th"=24753= ; red ; calved November 22nd, 1892 ; bred by exhibitors ; got by Barmpton Hero =324= ; dam, Mysie 44th=17247=, by Baron Camperdown (imp.) =1218=(47389), etc.

3rd, H. Cargill & Son, Cargill, "Ury Queen 2nd"=23242=; red and white ; calved November 27th, 1892; bred by exhibitors ; got by Albert Victor (imp.)=6315=(55250) ; dam, Ury Queen (imp.)=11094= ; Gravesend (46461), etc.

HEIFER CALF, UNDER 1 YEAR.

1st, Simmons & Quirie, Ivan, "Daisy of Strathallan 10th"=Vol. XI.= ; red ; calved September 15th, 1893 ; bred by C. M. Simmons, Ivan ; got by Mina Chief=13670= ; dam, Daisy of Strathallan =20732=, by Sir Christopher =3877=, etc.

2nd, Simmons & Quirie, Ivan, "Mina 2nd" (Vol. XI.) ; red ; calved September 12th, 1893 ; bred by exhibitors ; got by Mina Chief=13670= ; dam, Mina Dalhousie =16645=, by Earl of Dalhousie =3145=, etc.

3rd, Simmons & Quirie, Ivan, "Daisy of Strathallan 11th"=Vol. XI.= ; red ; calved September 25th, 1893 ; bred by C. M. Simmons, Ivan ; got by Mina Chief =13670= ; dam, Daisy of Strathallan =8839=, by Victor Regalis (imp.)=1310=(47205), etc.

4th, Simmons & Quirie, Ivan, "Daisy of Strathallan 12th"=Vol. XI.= ; red; calved November 27th, 1893; bred by C. M. Simmons, Ivan ; got by Mina Chief =13670= ; dam, Red Rose of Strathallan 3rd =13677=, by Ercildoune =617=, etc.

5th, J. I. Davidson & Son, Balsam, "42nd Duchess of Gloster" (Vol. XI.); white ; calved December 11th, 1893 ; bred by exhibitors ; got by Sittyton Chief =17060= ; dam, 39th Duchess of Gloster =23367=, by Grand Master (imp.) =11107=(52973), etc.

COW AND HER PROGENY, ALL OWNED BY THE EXHIBITOR.

Jas. & P. Crerar, Shakespeare.

FOUR CALVES, UNDER 1 YEAR OLD, BRED AND OWNED BY EXHIBITOR.

1st, Simmons & Quirie, Ivan.
2nd, J. I. Davidson & Son, Balsam
3rd, D. D. Wilson, Seaforth.

HERD, CONSISTING OF ONE BULL AND FOUR FEMALES OVER 1 YEAR OLD, OWNED BY THE EXHIBITOR.

1st, J. & W. B. Watt, Salem.
2nd, H. Cargill & Son, Cargill.
3rd, D. D. Wilson, Seaforth.

FEMALE OF ANY AGE.

J. & W. B. Watt, Salem.

HEREFORDS.

BULL, 3 YEARS OLD AND UPWARDS.

1st, F. A. Fleming, Weston, "Commodore" [402] 32943; sire, Cassio, 11353; dam, Constance, 11337, etc.
2nd, F. A. Fleming, Weston, "Baron Broady"; sire, Wilton Hillhurst [427] 36125; dam, Miss Broady (imp.) 23825, by Downton Grand Duke, 4182 (5878), etc.

BULL, 2 YEARS OLD.

1st, F. A. Fleming, Weston, "Grover" Vol. XIV.; sire, Commodore, 32943; dam, Gracie 2nd, 51486, etc.
2nd, H. D. Smith, Compton, Que., "Young Pinkham of Ingleside," 54002.
3rd, F. A. Fleming, Weston, "Barber" Vol. XIV.; sire, Commodore, 32943; dam, Barbara 2nd, 36808, etc.

BULL, 1 YEAR OLD.

1st, F. A. Fleming, Weston, "Barman" Vol. XIV. sire, Commodore, 32943; dam, Barbara 3rd, 51484, etc.
2nd, F. A. Fleming, Weston, "Sonnet" Vol. XIV.; sire, Commodore, 32943; dam, Sonora, 23863, etc.
3rd, H. D. Smith, Compton, Que., "Loretto of Ingleside" 53996.

BULL CALF, UNDER 1 YEAR.

1st, H. D. Smith, Compton, Que., "Lord Ingleside."
2nd, F. A. Fleming, Weston, "Commodore Fenn" Vol. XIV.; sire, Commodore, 32943; dam, Lady Fenn 5th, etc.

BULL OF ANY AGE.

F. A. Fleming, Weston, "Commodore." See above.

COW, 4 YEARS OLD AND UPWARDS.

1st, H. D. Smith, Compton, Que., "Lady Tushingham 3rd" 44679.
2nd, F. A. Fleming, Weston, "Lady Wilton" 36818; sire, Conqueror, 19425; dam, Lily 6th, 23833, etc.
3rd, F. A. Fleming, Weston, "Barbara 3rd" 51494; sire, Conqueror 2nd, 33482; dam, Broady 9th, 23846, etc.

COW, 3 YEARS OLD.

1st, H. D. Smith, Compton, Que., "Spot 3rd," 48222.
2nd, F. A. Fleming, Weston, "Lady Fenn 5th," Vol. XIV.; sire, Wilton Hillhurst, 36125; dam, Lady Fenn, etc.
3rd, F. A. Fleming, Weston, "Playful 2nd," Vol. XIV.; sire, Wilton Hillhurst, 36125; dam, Play, 22550, etc.

Heifer, 2 Years Old.

1st, F. A. Fleming, Weston, "Lotus Beauty," Vol. XIV.: sire, Commodore, 32943 ; dam, Beauty Lass, 22554, etc.
2nd, H. D. Smith, Compton, Que., "Josephine 2nd," 52219.

Heifer, 1 Year Old.

1st, F. A. Fleming, Weston, "Jennie of Craigleigh 3rd," Vol. XIV ; sire, Player, 46488 ; dam, Jenny, 22553, etc.
2nd, F. A. Fleming, Weston, "Lady Fenn 7th," Vol. XIV ; sire, Commodore, 32943 ; dam Lady Fenn, etc.
3rd, H. D. Smith, Compton, Que., "Sylvan of Ingleside," 53999.

Heifer Calf, Under 1 Year.

1st, F. A. Fleming, Weston, "Playmate," Vol. XIV : sire, Commodore, 32943 ; dam, Playful 2nd, etc.
2nd, F. A. Fleming, Weston, "Lady Fenn 8th," Vol. XIV ; sire, Baron Broady ; dam, Lady Fenn, 22250, etc.
3rd, H. D. Smith, Compton, Que., "Sylvan 2nd, of Ingleside."

Herd, Consisting of One Bull and Four Females, over 1 Year Old, Owned by the Exhibitor.

1st, F. A. Fleming, Weston.
2nd, H. D. Smith, Compton, Que.
3rd, F. A. Fleming, Weston.

Female of any Age.

H. D. Smith, Compton, Que., "Lady Tushingham 3rd." See above.

POLLED ANGUS.

Bull, 3 Years Old and Upwards.

1st, Robert Craik, M.D., Montreal, "Evelyn," 13211 : sire, Royal George, 13210 ; dam, Edith of Ballindalloch, 543, etc.
2nd, Hillhurst Farm, Hillhurst, Que., "Queen's Advocate," 14789 : sire, Lord Advocate, 6954 ; dam, Q. M. of Altyre 4th, 2272, etc.

Bull, 2 Years Old.

1st, Walter Hall, Washington, Ont., "Lucretius," 17109 ; sire, Elgin, 131 ; dam, Lucile (212), etc.
2nd, Robert Craik, M.D., Montreal, "Royal Blackbird," 16556 ; sire, Emperor of Guisachan, 16555 ; dam, Black Jade, 15188, etc.

Bull, 1 Year Old.

1st, James Bowman, Guelph, "Lord Aberdeen 2nd," 19810 ; sire, Gus, 19001 (8445) : dam, Kyma 3rd, etc.
2nd, Robt. Craik, M.D , Montreal, "Pride Imperial," 18416 : sire, Emperor of Guisachan ; dam, Pride of Guisachan 34th, 18415, etc.
3rd, Hillhurst Farm, Hillhurst, Que., "Defiance of Hillhurst, 19586 ; sire, Queen's Advocate, 14789 : dam, Daisy Blossom, etc.

Bull Calf, Under 1 Year.

1st, James Bowman, Guelph, "Lord Aberdeen 3rd"; sire, Lord Forest, 13152 : dam, Mysie of Verulam, 5354, etc.
2nd, Wm. Stewart & Son, Lucasville, "Hero of W. G.," 18986 ; sire, Lord Forest, 13152 ; dam, Hilda, etc.
3rd, Walter Hall, Washington, Ont., "Oxford King"; sire, Lucretius (146) ; dam, Newtong (188), etc.

Bull of any Age.

Robert Craik, M.D., Montreal, "Pride Imperial." See above.

Cow, 4 Years Old and Upwards.

1st, Robt. Craik, M.D., Montreal, "Pride of Guisachan 34th," 18415; sire, Free Lance of Guisachan, 18411; dam, Pride of Guisachan 21st, 18419.
2nd, Robt. Craik, M.D., Montreal, "Fairy of Eastview," 7776.
3rd, James Bowman, Guelph, "Kyma 2nd," 18920 (123); sire, Strathglass (imp.), 2645; dam, Kyma (imp.) 5500, etc.

Cow, 3 Years Old.

1st, Robt. Craik, M.D., Montreal, "Ericacea," 15191; sire, Knight of the Prides, 15190; dam, Emetine, 15186, etc.
2nd, Robt. Craik, M.D., Montreal, "Pride of the Erminie," 13806; sire, Erminie Bearer, 174J ; dam, Pride of Findhorn 3rd, 2705, etc.
3rd, Wm. Stewart & Son, Lucasville, "Heather Blossom of W. G.," 15559; sire, Lord Forest; dam, Hilda, 8759, etc.

Heifer, 2 Years Old.

1st, Hillhurst Farm, Hillhurst, Que., "Jean 2nd of Hillhurst," 16910; sire, Lord Hillhurst, 3990; dam, Jean 10th, 3931, etc.
2nd, Robert Craik, M.D., Montreal, "Pride of Emlyn, 16542; sire, Emlyn, 13211, dam, Pride of Findhorn 3rd, 2705, etc.
3rd, Hillhurst Farm, Hillhurst, Que., "Ermina 2nd of Hillhurst," 16809; sire, Waterside Jimmy, 12323; dam, Ermina, 3985, etc.

Heifer, 1 Year Old.

1st, Hillhurst Farm, Hillhurst, Que., "Ruby 4th of Hillhurst," Vol. VI; sire, Queen's Advocate, 14789; dam, Ruby 4th, of Powne, 3941, etc.
2nd, Robt. Craik, M.D., Montreal, "Lady Fairy," 16876; sire, Emlyn, 13211; dam, Fairy A. of Eastview, 7776.
3rd, Hillhurst Farm, Hillhurst, Que., "Jean 3rd of Hillhurst," Vol. VI; sire, Prince of H., 14787 dam, Jean of H., 4118, etc.

Heifer Calf, Under 1 Year.

1st, Hillhurst Farm, Hillhurst, Que., "Jean of Hillhurst," Vol. VI; sire, Queen's Advocate, 14789; dam, Jean of Hillhurst, 4118, etc.
2nd, Walter Hall, Washington, "Lady Gladstone," 245; sire, Lucretius (146); dam, Flora of Kinnoul Park (205), etc.
3rd, Robt Craik, M.D., Montreal, "Lady Fairy 2nd," 20412; sire, Emlyn, 13211; dam, Fairy A. of Eastview, 7776, etc.

Herd, Consisting of One Bull and Four Females, Over 1 Year Old, Owned by the Exhibitor.

1st, Robt. Craik, M.D., Montreal.
2nd, Hillhurst Farm, Hillhurst, Que.
3rd, James Bowman, Guelph.

Female of any Age.

Robt. Craik, M.D., Montreal, "Eracasea." See above.

GALLOWAYS.

Bull, 3 Years Old and Upwards.

1st, John Sibbald, Annam, "Paris, of Claverhouse," 7983; sire, Claverhouse (imp.), 4614; dam, Agnes of Egremont, 777, etc.
2nd, D. McCrae, Guelph, "Canadian Borderer," 5945; sire, Scottish Borderer, 669; dam, Lizzie 7th of Tarbrioch, 8935, etc.
3rd, D. McCrae, Guelph, "Norfolk," 6764; sire, Black Ronald, 4326; dam, Nettie of Chapel Hill, 8840, etc.

Bull, 2 Years Old.

1st, A. M. & R. Shaw, Brantford, "MacCartney," 9739; sire, Glencraig, 5028; dam, Carline, 5932, etc.
2nd, D. McCrae, Guelph, "McArthur," 9739; sire, Count Palatine; dam, Lady Stanley A., 6771.

Bull, 1 Year Old.

1st, D. McCrae, Guelph, "College Boy," 10395: sire, Galloway King, 5489: dam, Lizzie 7th of Drumlanrigg, 9187, etc.
2nd, A. M. & R. Shaw, Brantford, "Dandy Jim," 10387: sire, Count Monk, 5728: dam, Gem 3rd of Drumlanrigg, 9187, etc.

Bull Calf, Under 1 Year.

1st, D. McCrae, Guelph, "McLaurin: sire, Norfolk, 6764: dam, Lady Monk 2nd, 9492, etc.
2nd, A. M. & R. Shaw, Brantford, "Ladas," 10807: sire, MacCartney, 9738: dam, Gem 3rd of Drumlanrigg, 9187, etc.
3rd, A. M. & R. Shaw, Brantford, "Prince of Blackness," 10800: sire, MacCartney, 9739: dam, Flora McErin, 5735, etc.

Bull of any Age.

John Sibbald, Annam, "Paris, of Claverhouse." See above.

Cow, 4 Years Old and Upwards.

1st, D. McCrae, Guelph, "Good Girl," 7431; sire, Baliol, 1475; dam, Eva Garleston, 2844, etc.
2nd, A. M. & R. Shaw, Brantford, "Gem 3rd, of Drumlanrigg," 9187: sire, Commonwealth, 5941; dam, Gem 2nd of Drumlanrigg, 2833, etc.
3rd. D. McCrae, Guelph, "Lady Constance 2nd," 9571: sire, Netherlea, 3335; dam, Charlotte of Drumlanrigg, 3819, etc.

Cow, 3 Years Old.

1st, A. M. & R. Shaw, Brantford, "Rosy McErin," 8507; sire, Count Monk, 5728; dam, Flora McErin, 5735, etc.
2nd, D. McCrae, Guelph, "Queenie Fad," 8514; sire, Chester, 4472: dam, Queenie of Guelph, 5736, etc.

Heifer, 2 Years Old.

1st, D. McCrae, Guelph, "Maid Marian B.," 9750: sire, Canadian Borderer, 5945: dam Maid Marian A, 6773.
2nd, D. McCrae, Guelph, "Duchess IX.," 9752: sire, Squire Porter, 6765: dam, Duchess VII. of Drumlanrigg, 9590.
3rd, D. McCrae, Guelph, "Semiramis C.," 9749: sire, Stanley II. O. E. F. 2837: dam, Semiramis XIX., 9609.

Heifer, 1 Year Old.

1st, A. M. & Robert Shaw, Brantford, "Rheta McErin," 10384: sire, Count Monk, 5728: dam, Flora McErin, 5735
2nd, A. M. & Robert Shaw, Brantford, "Mary Anderson II.," 10383; sire, Count Monk, 5728; dam, Ailie Anderson, 6668.
3rd, D. McCrea, Guelph, "Lady Conloden," 10277: sire, The Cob, 4167: dam, Lady Constance II., 9571.

Heifer Calf, Under 1 Year.

1st, D. McCrae, Guelph, "Adela of Eramosa."
2nd, A. M. & R. Shaw, Brantford, "Countess of High Park," 10803.
3rd, D. McCrae, Guelph, "Duchess Kula."

Herd, Consisting of One Bull and Four Females, Over 1 Year Old, Owned by the Exhibitor.

1st, A. M. & R. Shaw, Brantford.
2nd, D. McCrae, Guelph.
3rd, D. McCrae, Guelph.

Female of any Age.

D. McCrae, Guelph, "Good Girl." See above.

DEVONS.

BULL, 3 YEARS OLD AND UPWARDS.

1st, W. J. Rudd, Eden Mills, "Billie," 998; sire, Hero, 982; dam, Lady Creamer, 929, etc.

BULL, 2 YEARS OLD.

1st, W. J. Rudd, Eden Mills, "Dainty Davy."

BULL, 1 YEAR OLD.

1st, W. J. Rudd, Eden Mills, "Jack"; sire, Billie, 998; dam, Dido, 951, etc.
2nd, Ralph R. Rudd, Eden Mills, "Charlie," 1010; sire, Billie, 998; dam, Gem, 986, etc.
3rd, W. J. Rudd, Eden Mills, "Carlo."

BULL CALF, UNDER 1 YEAR.

1st, W. J. Rudd, Eden Mills, "Rob"; sire, Billie, 993; dam, Ruby, 1018.
2nd, W. J. Rudd, Eden Mills, "Chief II."; sire, Captain, 984; dam, Rose, 953.
3rd, Ralph R. Rudd, Eden Mills, "Major."

BULL OF ANY AGE.

1st, W. J. Rudd, Eden Mills, "Billie," 998. See above.

COW, 4 YEARS OLD AND UPWARDS.

1st, W. J. Rudd, Eden Mills, "Beauty II.," O. E. F., 1032; sire, Duke, 947.
2nd, W. J. Rudd, Eden Mills, "Dido," 951; sire, Victor, 884; dam, Beauty, 800.
3rd, Ralph R. Rudd, Eden Mills, "Gem," 986; sire, Lord Lansdowne, 933; dam, Charlotte, 954.

COW, 3 YEARS OLD.

1st, W. J. Rudd, Eden Mills, "Ruby," 1018; sire, Young Ensign, 925; dam, Lady Graceful, 946.
2nd, W. J. Rudd, Eden Mills, "Pansy," 1016; sire, Young Ensign, 925; dam, Lady Charlotte, 954.
3rd, Ralph R. Rudd, Eden Mills, "Maud," 1017; sire, Young Ensign, 925; dam, Rose, 953.

HEIFER, 2 YEARS OLD.

1st, W. J. Rudd, Eden Mills, "Fanny II.," 1033; sire, Young Ensign, 925; dam, Fanny, 885.
2nd, W. J. Rudd, Eden Mills, "Daisy," 1063; sire, Young Ensign, 925; dam, Flower of the Flock, 889.
3rd, Ralph R. Rudd, Eden Mills, "Rose II.," 1037; sire, Young Ensign, 925; dam, Rose, 953.

HEIFER, 1 YEAR OLD.

1st, W. J. Rudd, Eden Mills, "Fanny III."; sire, Billie, 998; dam, Fanny, 885, etc.
2nd, Ralph R. Rudd, Eden Mills, "Julia II."; sire, Billie, 998; dam, Julia, 1013, etc.
3rd, W. J. Rudd, Eden Mills, "Beauty III."; sire, Billie, 998; dam, Beauty II., O. E. F., 1032, etc.

HEIFER CALF, UNDER 1 YEAR.

1st. W. J. Rudd, Eden Mills, "Blossom G."
2nd, W. J. Rudd, Eden Mills, "Cherry B."
3rd, Ralph R. Rudd, Eden Mills, "Linda M."

HERD, CONSISTING OF ONE BULL AND FOUR FEMALES OVER 1 YEAR OLD, OWNED BY THE EXHIBITOR.

1st, W. J. Rudd, Eden Mills.

FEMALE OF ANY AGE.

1st, W. J. Rudd, Eden Mills.

AYRSHIRES.

Bull, 3 Years Old and Upwards.

1st, Jas. McCormack & Son, Rockton, "Sir Laughlin"—1156— ; red and white, calved March 3rd, 1890; bred by David Nichol, Cataraqui ; sire, Norseman—478— ; dam, Silvia—856—, by Stonewell—151—, etc.

2nd, W. M. & J. C. Smith, Fairfield Plains, "Hamilton Chief"—875— ; red and white ; calved April 18th, 1890 ; bred by David Morton & Sons, Hamilton ; sire, Royal Chief (imp.)—75— ; dam, Judy (imp.)—1206, by Red Prince (1000), etc.

3rd, Wm. Stewart & Son, Menie, "White Prince II." (imp. in dam)—808— ; white, with brown spots ; calved April 23rd, 1889 ; bred by J. Caldwell, Dundonald, Scot., imported by D. Morton & Sons, Hamilton : White Prince (1364), dam, Red Rose (imp.)—1207—(5510) by the Lad Kyle (999), etc.

Bull, 2 Years Old.

1st, John Cunningham, Norval, "Sunrise"—1296 ; white and little red ; calved May 22nd, 1892 ; bred by exhibitor ; sire, Campbell of Peel—1295 ; dam, Maud Mars—634— ; by Sir Colin—138—, etc.

2nd, R. H. Steacey, Lyn, "Carlyle of Lessnessock" (imp.)—1655— ; white and brown ; calved May 1st, 1892 ; bred by R. Montgomerie, Lessnessock, Scot. ; imported by B. D. Steacy, Brockville ; sire, Cock-a-birdie of Drumjoan (1204) ; dam, Hillhead IV. of Lessnessock (7844) ; by Lord Randolph of Dumfrieshire (7844), etc.

3rd, Wm. Stewart, Jr. & Sons, Menie, "Tam Glen II."—1310— ; white with red markings ; calved October 28th, 1891 ; bred by exhibitors ; sire, White Prince II. (imp. in dam)—808— ; dam, Jessie Stewart —538— ; by Success—305—, etc.

Bull, 1 Year Old.

1st, Wm. Stewart, Jr. & Son, Menie, "Sir Robert Bruce" ; sire, White Prince II. (imp. in dam)—808— ; dam, Pride of Menie Stock Yards—1182—.

2nd, James McCormack & Son, Rockton, "Guy Fawkes" ; sire, Sir Laughlin—1159— ; dam, Maggie Campbell—1938—.

3rd, Thos. Guy, Oshawa, "Lord Aberdeen"—1448— ; dark red and white ; calved November 20th, 1892 ; bred by exhibitor ; sire, Baron of Park Hill—878— ; dam Violet—763— ; by Wm. Wallace—130—, etc.

Bull Calf, Under 1 Year.

1st, R. G. Steacy, Lyn, "Lord Douglas I. of Maple Grove" (imp. in dam)—1654— ; white, with brown spots ; calved February 7th, 1894 ; bred by Hugh Drummond, Craighead, Scot. ; imported in dam by B. D. Steacy, Brockville ; sire, Lord Glasgow (2681) ; dam, Love IV. of Craighead (imp.)—2602—(8043), by Cherry Lad of Craighead (2218), etc.

2nd, Wm. Stewart, Jr. & Son, Menie, "Dainty Davy II." ; sire, Dainty Davy—800— ; dam, May Queen —2132—.

3rd, Jas. McCormack & Son, Rockton, "Grandeur" ; sire, Sir Laughlin—1156— ; dam, Luna—283—.

4th, Thos. Guy, Oshawa, "Royal Saxon"—1686— ; white, spotted with red ; calved February 1st, 1894 ; bred by exhibitor ; sire, Baron of Parkhill—878— ; dam, Oshawa Lass III.—1782—, by Butterfly of Oshawa—352—etc.

Bull of any Age.

1st, Jas. McCormack & Son, Rockton, "Sir Laughlin"—1156—. See above.

Cow, 4 Years Old and Upwards.

1st, Jas. McCormack & Son, Rockton, "Primrose VI."—1763— ; white and red ; calved March 20th, 1889 ; bred by exhibitors ; sire, Hero of Rockton—220— ; dam, Primrose IV.—302—, by Indian Chief—129—, etc.

2nd, Wm. Stewart, Jr. & Son, Menie, "Jessie Stewart"—538— ; red and white ; calved June 28th, 1887 ; bred by exhibitors ; sire, Success—305— ; dam, Princess of Menie—537—, by Duke of Belleville —302—, etc.

3rd, Jas. McCormack & Son, Rockton, "Maggie Campbell" ; sire, Campbell ; dam, Maggie of Rockton, etc.

Cow, 3 Years Old.

1st, R. G. Steacy, Lyn, "White Rose of Alticane" (imp.)—2049— ; white with brown spots ; calved February 16th, 1891 ; bred by John Barbour, Alticane, Girvan, Scot. ; imported in 1893 by B. D. Steacy, Brockville ; sire, Scotland Yet of Piper Hill ; dam, White Flower of Alticane (4293), by Dandy of Alticane (1475).

2nd, R. G. Steacy, Lyn, "Love IV. of Craighead" (imp.)—2503— (8043) : white, with brown spots ; calved May 27th, 1891 ; bred by Hugh Drummond, Craighead, Scot. ; imported in 1893 by R. D. Steacy, Brockville : sire, Cherry Lad of Craighead (2218) ; dam, Love of Craighead (3448), by Herdsman (844).

3rd, W. B. Cockburn, Aberfoyle, "Jean Armour" ; sire, Royal Chief (imp.) 75 ; dam, Sprightly (imp.) 1210.

HEIFER, 2 YEARS OLD.

1st, Thos. Guy, Oshawa, "Dolly of the Lake"—2260—; red and white; calved September 25th, 1891; bred by exhibitor; sire, Baron of Parkhill—878—; dam, Dolly—760—, by Sir Garnet—212—, etc.

2nd, Jas. McCormack & Son, Rockton, "Empress of Rockton"; sire, Sir Laughlin—1156—; dam, Daisy of Rockton—1101—.

3rd, W. M. & J. C. Smith, Fairfield Plains, "Gurta XVII."—1958—; red and white; calved September 23rd, 1891; bred by exhibitors; sire, Rob Roy of Oxford—300—; dam, Gurta XIV.—886—, by Jock—344—, etc.

HEIFER, 1 YEAR OLD.

1st, Thos. Guy, Oshawa, "Dolly of Ontario"—2261—; red and white; calved September 23rd, 1892; bred by exhibitor; sire, Baron of Park Hill—878—; dam, Dolly—760—, by Sir Garnet—242—, etc.

2nd, Wm. Stewart, Jr. & Son, Menie, "Scotch Lassie Jean"—2230—; white, with red markings; calved September 28th, 1892; bred by exhibitors; sire, White Prince II. (imp. in dam)—808—; dam, Jessie Stewart—538—, by Success—395—, etc.

3rd, W. M. & J. C. Smith, Fairfield Plains, "Pauline Hall"—2241—; red and white; calved September 13th, 1892; bred by exhibitors; sire, Hamilton Chief—875—; dam, Edna of Fairfield—1940—, by Rob Roy of Oxford—300—, etc.

HEIFER CALF, UNDER 1 YEAR.

1st, Wm. Stewart, Jr. & Son, Menie, "Annie Laurie II."; sire, White Prince II. (imp.)—808—; dam, Jessie Stewart—538—, etc.

2nd, Wm. Stewart, Jr. & Son, Menie, "White Rose of Menie"; sire, White Prince II. (imp.)—808—; dam, Daisy II., etc.

3rd, Jas. McCormack & Son, Rockton, "Perfection": sire, Sir Laughlin—1156—; dam, Rose Campbell—1938—, etc.

4th, Wm. Stewart, Jr. & Son, Menie, "White Floss of Menie"; sire, White Prince II. (imp.)—808—; dam, Lady Macdonald—899—etc.

COW AND TWO OF HER PROGENY, ALL OWNED BY EXHIBITOR.

1st, Jas. McCormack & Son, Rockton.
2nd, Wm. Stewart, Jr. & Son, Menie.
3rd, Jas. McCormack & Son, Rockton.

FOUR CALVES UNDER 1 YEAR OLD; BRED AND OWNED BY EXHIBITOR.

1st, Wm. Stewart, Jr. & Son, Menie.
2nd, Thos. Guy, Oshawa.
3rd, Jas. McCormack & Son, Rockton.

HERD, CONSISTING OF ONE BULL AND FOUR FEMALES, OVER 1 YEAR OLD, OWNED BY EXHIBITOR.

1st, Jas. McCormack & Son, Rockton.
2nd, R. & G. Steacy, Lyn.
3rd, Wm. Stewart, Jr. & Son, Menie.

FEMALE OF ANY AGE.

R. & G. Steacy, Lyn, "White Rose of Alticane (imp.), 2049. See above.

JERSEYS.

BULL, 3 YEARS OLD AND UPWARDS.

1st, J. L. Clark, Brampton, "Mighty Dollar."
2nd, J. H. Smith & Sons, Highfield, "Hugo Alpha of Oak Lawn."
3rd, H. A. Ekers, Montreal.

BULL, 2 YEARS OLD.

1st, J. M. McKay, Elmbank, "Pride of Elmbank."
2nd, David Duncan, Don, "Sheriff of St. Lambert."

BULL, 1 YEAR OLD.

1st, J. H. Smith & Sons, Highfield, "King of Highfield."
2nd, Wm. Rolph, Markham, "Perfect Combination.
3rd, Geo. Osborne, Kingston, "Primrose Park's Peter."

BULL CALF, UNDER 1 YEAR.

1st, Wm. Rolph, Markham, "Hugo of Glen Rouge."
2nd, Geo. Osborne, Kingston, "Primrose Park's Pacha."
3rd, Wm. Rolph, Markham, "Lord of Glen Rouge."
4th, J. H. Smith & Sons, Highfield, "Art of Highfield."

BULL OF ANY AGE.

J. L. Clark, Brampton, "Mighty Dollar." See above.

COW, 4 YEARS OLD AND UPWARDS.

1st, J. H. Smith & Sons, Highfield, "Signal Rosa May," 50092.
2nd, David Duncan, Don, "Sunbeam of St. Lambert."
3rd, Geo. Osborne, Kingston, "Williamsville Editha."

COW, 3 YEARS OLD.

1st, Wm Rolph, Markham, "Ethel Marjoram."
2nd, J. H. Smith & Sons, Highfield, "Elena of Oakdale."
3rd, H. A. Ekers, Montreal.

HEIFER, 2 YEARS OLD.

1st, Geo. Osborne, Kingston, "Primrose Park's Pride," 89609.
2nd, David Duncan, Don, "Pride of Don," 88293.
3rd, David Duncan, Don, "Lady Fawson of St. Anne's," 86772.

HEIFER, 1 YEAR OLD.

1st, Wm. Rolph, Markham, "Lively of St. L," 94642.
2nd, J. H. Smith & Sons, Highfield, "Magnolia of Highfield."
3rd, Wm. Rolph, Markham, "Merridale Rosebud," 94862.

HEIFER CALF, UNDER 1 YEAR.

1st, J. H. Smith & Sons, Highfield, "Olivia of Highfield."
2nd, Geo. Osborne, Kingston, "Primrose Park's Peony," 97583.
3rd, Geo. Osborne, Kingston, "Priscilla Pierrot," 90582.
4th, Wm. Rolph, Markham, "Lady of Glen Rouge."

FOUR CALVES UNDER 1 YEAR OLD, BRED AND OWNED BY EXHIBITOR.

1st, George Osborne, Kingston.
2nd, Wm. Rolph, Markham.
3rd, J. H. Smith & Sons, Highfield.

HERD OF ONE BULL AND FOUR FEMALES, OVER 1 YEAR OLD, OWNED BY EXHIBITOR.

1st, J. H. Smith & Sons, Highfield.
2nd, David Duncan, Don.
3rd, Wm. Rolph, Markham.

FEMALE OF ANY AGE.

J. H. Smith & Sons, Highfield, "Signal Rosa May," 50092. See above.

GUERNSEYS.

BULL, 3 YEARS OLD AND UPWARDS.

1st, Isaac Holland, Culloden, "May Roseberry," 3423.
2nd, W. H. & C. H. McNish, Lyn, "Florist," 2257.

BULL, 2 YEARS OLD.

1st, W. H. & C. H. McNish, Lyn, "Presto of Elm Grove."
2nd, R. Moody & Son, Guelph, "Rosebery Duke."

BULL, 1 YEAR OLD.

1st, J. N. Greenshields, Danville, Que., "Isaleigh Choice."
2nd, Isaac Holland, Culloden, "Dandy of Oxford."

BULL CALF, UNDER 1 YEAR.

1st, W. H. & C. H. McNish, Lyn, "Rosanne's Prince."
2nd, J. N. Greenshields, Danville, Que.

BULL OF ANY AGE.

Isaac Holland, Culloden, "May Roseberry," 3423. See above.

COW, 4 YEARS OLD AND UPWARDS.

1st, J. N. Greenshields, Danville, Que., "Eliza C. II," 3725.
2nd, J. N. Greenshields, Danville, Que., "Little May Queen," 7069.

COW, 3 YEARS OLD.

1st, W. H. & C. H. McNish, Lyn, "Rosebud."
2nd, J. N. Greenshields, Danville, Que., "Sarah C. III."

HEIFER, 2 YEARS OLD.

1st, J. N. Greenshields, Danville, Que., "Isaleigh May Queen."
2nd, W. H. & C. H. McNish, Lyn, "Calanthe," 6888.

HEIFER, 1 YEAR OLD;

1st, J. N. Greenshields, Danville, Que., "Isaleigh Princess."
2nd, W. H. & C. H. McNish, Lyn, "Presto's Rougette III.," 6890.

HEIFER CALF, UNDER 1 YEAR.

1st, Robt. Moody & Son, Guelph, "Columbine."
2nd, W. H. & C. H. McNish, Lyn.

HERD, CONSISTING OF ONE BULL AND FOUR FEMALES, OVER 1 YEAR, OWNED BY EXHIBITOR.

1st, J. N. Greenshields, Danville, Que.
2nd, W. H. & C. H. McNish, Lyn.

FEMALE OF ANY AGE.

J. N. Greenshields, Danville, Que., "Eliza C. II," 3725. See above.

HOLSTEINS.

Bull, 3 Years Old and Upwards.

1st, A. C. Hallam & Co., New Dundee, "Netherland Statesman Cornelius," 46; sire, Netherland Statesman, 328; dam, Aggie Cornelius II, 4341, etc.
2nd, McDuffee & Butters, Stanstead, Que., "Artis Peer," 9045; sire, Prince of Artis, 2479; dam, Netherland Peren II, 6059, etc.
3rd, R. S. Stevenson, Ancaster, "Royal Canadian Netherland," 45; sire, Netherland Prince, 116; dam, Princess Margaret, 5226, etc.

Bull, 2 Years Old.

1st, A. Hoover, Emery, "Emery Prince," 482; sire, Baillie II, 129; dam, Lize, 95, etc.
2nd, A. C. Hallman & Co., New Dundee, "Netherland Eden," 536; sire, Netherland Statesman Cornelius, 46; dam, Princess Margaret, 145, etc.
6rd, W. G. Ellis, Bedford Park, "Sir Arch. Mascot," 353; sire, Sir Archibald's Son, 7026; dam, Lutske III, 888.

Bull, 1 Year Old.

1st, W. G. Clemons, St. George, "Netherland Consul," 530; sire, Netherland Statesman Cornelius," 46; dam, Polianthus, 151, etc.
2nd, A. C. Hallman & Co., New Dundee, "Netherland Caesar," 646; sire, Royal Cornelius Netherland, 45; dam, Phoebe Zieman II., 152, etc.
3rd, W. G. Ellis, Bedford Park, "Pride of Don Valley," 654; sire, Baillie II., 13870; dam, Lutske III, 888, etc.

Bull Calf, Under 1 Year.

1st, A. Hoover, Emery, "Baron Witzyde," 650.
2nd, A. C. Hallman & Co., New Dundee, "Madison."
3rd, McDuffee & Butters, Stanstead, Que., "Artis of Sunnyside."
4th, McDuffee & Butters, Stanstead, Que., "Bosnia's Artis Peer of Sunnyside."

Bull of any Age.

A. Hoover, Emery, "Emery Prince," 482.

Cow, 4 Years Old and Upwards.

1st, A. G. Rice, Currie's, "Eunice Clay," 1007; sire, Lord of Cornwall, 3429; dam Emma Clay, 1588, etc.
2nd, McDuffee & Butters, Stanstead, Que., Frintje of Pine Grove, 12822.
3rd, McDuffee & Butters, Stanstead, Que., "Evertje of PineGrove," 12833.

Cow, 3 Years Old.

1st, W. G. Ellis, Bedford Park, "Princess Lida IV," 390; sire, Netherland Statesman Cornelius, 46; dam, Princess Lida, 143, etc.
2nd, W. G. Ellis, Bedford Park, "Clarabell Sjut," 24736; sire, Minks Mercedes Baron, 5676; dam, Witzide Sjut, 18813.
3rd, A. G. Rice, Currie's, "Calamity Jane," 26292.

Heifer, 2 Years Old.

1st, G. W. Clemons, St. George, "Madge Merton," 721.
2nd, A. G. Rice, Currie's, "Daisy Jewel," 343.
3rd, A. Hoover, Emery, "Emery Beauty," 508.

Heifer, 1 Year Old.

1st, G. W. Clemons, St. George, "Netherland Blanche," 669.
2nd, A. G. Rice, Currie's, "Jewel Mercedes Artis Queen," 934.
3rd, A. C. Hallman, New Dundee, "Dundee Rose," 954.

Heifer Calf, Under 1 Year

1st, A. C Rice, Currie's, "Pietertje Jewel Lass."
2nd, G. W. Clemons, St. George, "Kate Claxon," 1101.
3rd, A. G. Rice, Currie's, "Velvet."
4th, G. W. Clemons, St. George, "Ruth Raynor," 1100.

HERD OF ONE BULL AND FOUR FEMALES, OVER 1 YEAR, OWNED BY EXHIBITOR.

1st, McDuffee & Butters, Stanstead, Que.
2nd, A. G. Rice, Currie's.
3rd, W. G. Ellis, Bedford Park.

BULL AND FOUR OF HIS PROGENY, ANY AGE, OWNED BY THE EXHIBITOR.

1st, A. C. Hallman & Co., New Dundee.
2nd, McDuffee & Butters, Stanstead, Que.

FEMALE OF ANY AGE.

A. G. Rice, Currie's, "Eunice Clay," 1007. See above.

BEST FAT HOLSTEIN, GRADE OR THOROUGHBRED, STEER OR HEIFER, OF BLACK AND WHITE COLOR. AGE TO BE UNDER 3 YEARS.

1st, R. S. Stevenson, Ancaster.
2nd, A. G. Rice, Currie's.

ANNUAL REPORTS

OF THE

DAIRYMEN AND CREAMERIES' ASSOCIATIONS

OF THE

PROVINCE OF ONTARIO

1894.

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.
DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.
CREAMERIES' ASSOCIATION OF ONTARIO.

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, TORONTO.)

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FINANCIAL STATEMENTS FOR 1894.

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

RECEIPTS.

Cash on hand from previous year, as per last report	$404 56
Members' fees	127 00
Legislative grant	2,750 00
Money received from prosecutions	577 00
Factory fees, per Belleville Board of Trade	146 00
Factory fees, per Inspectors of Trade	1,974 00
Total	$5,978 56

EXPENDITURE.

Grants to other societies, fairs, etc	$50 00
Expenses for conventions or regular meetings	484 00
Officers' salaries	170 00
Directors' fees and expenses	232 37
Postage and stationery	5 94
Printing	66 04
Inspectors' salaries and expenses	4,353 00
Cost of reporting	60 00
Balance of Inspectors' salaries, 1893	36 00
Expenses, special delegation to Toronto	27 00
Court costs, incurred former years	115 00
Balance on hand	379 21
Total	$5,978 56

Examined and found correct, this 4th day of January, 1895.

J. R. DARGAVEL, }
MORDEN BIRD, } Auditors.

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

RECEIPTS.

Cash balances from 1893	$623 96
Members' fees	292 00
Legislative grant	2,750 00
Proceeds from advertisements in convention programme	143 00
Fines for 1894 per T. B. Millar	89 00
Fine for 1894 per S. Flack	7 00
Inspectors' fees for 1894 per T. B. Millar	247 00
Witness fees and mileage received per T. B. Millar	6 00
Proceeds from sale of Babcock tester	10 00
Part of Secretary's travelling expenses received from factorymenand others	33 00
Total	$4,200 96

DISBURSEMENTS.

Expenses of Annual Convention :		
Speakers, services and expenses	$145 00	
Printing programmes and wrappers	132 50	
Printing badges, tickets, etc	24 14	
Advertising	49 00	
Reporting	80 00	
Sundries	18 00	
		$448 64
Expenses of local conventions		57 65
Expenses of local dairy meetings per T. B. Millar		66 17
Directors' expenses		60 90
Expenses of meeting *re* cheese-markets		34 50
Officers' expenses and auditing		192 60
Printing circulars, etc		43 25
H. S. Losee, for services *re* cheese exhibit, 1893		10 00
Supplies for Inspector		33 15
Association reports, 1867-1892, per C. E. Chadwick		30 00
A. T. Bell, salary, Superintendent Dairy School, Tavistock, 1893		300 00
J. W. Wheaton, balance of salary for 1893		353 57
Grant to Western fair		100 00
T. B. Millar, travelling expenses for 1894		289 78
Expenses, appeal case *re* Williams		11 10
C. E. Chadwick, one year's gratuity		100 00
T. B. Millar on salary account, 1894		768 24
J. W. Wheaton, on salary account, 1894		793 50
Travelling expenses of Secretary, 1894		172 81
Balance on hand		335 10
Total		$4,200 96

ASSETS.

Balance on hand	$335 10
Inspectors' fees, 1894, unpaid	37 50
Due on Secretary's travelling expenses from factorymen and others	18 80
Office fixtures	30 00
Three Babcock testers and equipment	35 00
Total	$456 40

LIABILITIES.

Balance due on Secretary's salary for 1894	$206 50
Balance due on Inspector's salary for 1894	31 76
Balance of assets over liabilities	218 14
Total	$456 40

We hereby certify that we have examined the books and vouchers of the Western Dairymen's Association and find them correct and in accordance with the foregoing statement.

J. A. NELLES,
J. C. HEGLER, } Auditors.

LONDON, January 12th, 1895.

CREAMERIES ASSOCIATION OF ONTARIO.

RECEIPTS.

Balance from last audit	$110 53
Receipts from memberships	150 00
Government grant	2,000 00
Advertising	135 00
Total	$2,395 53

DISBURSEMENTS.

Instructor's salary and expenses	$1,169 10
Officers' salary and expenses	106 02
Board meetings	263 00
Printing and advertising	148 00
Reporting conventions	114 35
Auditing accounts	10 00
Delegates' and speakers' expenses	416 73
Balance on hand	168 33
Total	$2,395 53

Audited and found correct.

J. A. BROWN,
A. S. GOODEVE, } Auditors.

CHESLEY, January 10th, 1895.

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

OFFICERS FOR 1895.

President,	Edward Kidd, North Gower.
1st Vice-President,	E. J. Madden, Newburg.
2nd Vice-President,	John McTavish, Vancamp.
Directors :	
Division No. 1	R. A. Craig, North Gower.
Division No. 2	William Eager, Morrisburg.
Division No. 3	John R. Dargavel, Elgin.
Division No. 4	James Whitton, Wellman's Corners
Division No. 5	T. B. Carlaw, Warkworth.
Division No. 6	Henry Wade, Toronto.
Secretary,	R. G. Murphy, Elgin.
Treasurer,	P. R. Daly, Foxboro'.
Auditors,	Morden Bird, Stirling. Wm. Bissell, Algonquin.
Instructors,	G. G. Publow, Perth.
"	J. D. McCann, Perth.
"	A. P. Purvis, Maxville.
"	George Bensley, Warkworth.
"	W. W. Grant, Peterboro'.
"	Robert Rollins, Madoc.

EIGHTEENTH ANNUAL CONVENTION

OF THE

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

The eighteenth annual meeting of the Association was held in Gananoque on Wednesday, Thursday, and Friday, January 2nd, 3rd, and 4th, 1895. The sessions were held in Turner's Opera House, and, with the exception of the opening meeting, all the gatherings were large. The local interest was great, and the hospitality of the citizens of Gananoque proved to be hearty and generous.

THE PRESIDENT'S ADDRESS.

Mr. T. B. Carlaw, of Warkworth, President of the Association, upon taking the chair, and calling the meeting to order, proceeded to deliver the following address:

It gives me great pleasure, ladies and gentlemen, to meet the dairymen of Eastern Ontario again, especially in this historic section, where you have always been active and energetic in promoting advanced dairying. Another successful season has just closed, and I am glad to say that our year's operations have been very satisfactory. We are convened here to-day to take counsel together, and see what can be done to make further advancement. We know that finer goods will be demanded each year, and that only the best will bring top money. We have occupied the highest position in the art of making fancy goods in the past, and we are determined to be leaders in the future; and as competition is becoming keener each year we must diffuse the best dairy knowledge more fully among all our farmers and cheese makers, so that they will work more intelligently in the future, and give greater attention to every detail of their business. Let us urge all our cheese-makers to attend one of our dairy schools, which have been instituted for the purpose of giving practical education, by competent people, free. They can fully equip themselves for their profession, so that they can do better service, make a higher and more uniform class of goods, and they will at once become enthusiastic in their calling, and begin to educate their patrons to make more milk from the same number of cows, and for less money, and at the same time have it delivered at the factory in better condition. I believe this is very essential.

The Eastern Ontario Dairymen's Association may justly feel proud of the great work which it has accomplished. A few short years ago the cheese industry was only in its infancy. It was looked upon as a delicate child, and its early death was predicted. The child still lives, however, and it has grown to such immense proportions that to-day we find the cheese industry one of the greatest wealth-producing factors in the Dominion. Last year (1893) Canada sent to England no less than $13,400,000 worth of cheese, and it is expected that 1894 will have sent the large amount of $14,200,000 worth. The British market is an important market to us. The United Kingdom consumes annually 237,000 tons of cheese, or about 650 tons every day. Of this amount nearly one-half must be imported. It is certainly very gratifying to know that our cheese rank so exceedingly high in the British markets. We are told that when an Englishman sees a Canadian cheese he knows it to be a good article. Our success in foreign markets is largely due to our very efficient staff of instructors and inspectors. In 1877 we commenced with only one instructor, and this last year we had to employ six, and even then they were scarcely able to cover the work allotted to them. The Ontario Government has given financial aid each year in carrying on our work, and although we are very thankful for what they have already done, I trust that Government may see the way clear to considerably increase the grant. The good name of Canadian cheese is now established. We have got that name through hard, honest work, and steady perseverance. Let us strive to maintain that good name. In order to do so we must have good, clean, honest work, from the milk producer to the exporter.

The members of this Association are deeply indebted to the worthy chairman of the programme committee, Mr. Murphy, for the very excellent programme which he has provided for our meetings. It could not be improved. I am glad we have no politics in our Association. Both Governments are endeavoring to further the interests of the agriculturist. Both Governments are always willing to impart the knowledge they gain either by observation or experience. The farmer of Ontario cannot too highly appreciate the valuable services of the Hon. J. Dryden, Minister of Agriculture. He is thoroughly posted in his work, and is ever ready to lend a helping hand when in his power to do so. I thank the citizens of Gananoque for the very warm reception given to this Association, and especially the reception given our local committee. You responded nobly, and your liberality enabled us to issue the pamphlet programme now in your hands advertising this meeting, which does your town credit. I take this opportunity of thanking the officers and members of this Association for their assistance during the year just closed. The Board of Directors have worked harmoniously, and I believe in the best interest of the Association and of progressive dairying. Our instructors have never done as good work, and I feel greatly encouraged for the future.

It is my sad and painful duty to call your attention to the fact that since our last meeting death has entered our ranks and carried away one of our most esteemed colleagues. I refer to the late Mr. J. T. Warrington, jr., cheese exporter, of Belleville, and an ex-president of this Association. I hope you will pass a resolution suitable to the occasion, and forward an engrossed copy, signed by the President and Secretary, to the widow and family.

Our meeting here is for education, and we never had as good a staff of speakers. We want all to assist as far as possible, and make this the greatest meeting ever held in this section. Every dairyman in Eastern Ontario should become a member and make up his mind to keep only profitable cows in larger numbers, build silos, better stables, and grow corn. Make it your great study to produce larger quantities of fine milk, and insist on your own factory being first-class in every respect, well equipped, with an educated cheese maker in charge, and 1895 will even be more successful than any of the past. Again thanking you all, I trust our meetings at this time may prove both interesting and profitable, that the different subjects may be fully discussed, that we shall be able to carry into effect the many valuable suggestions of the meetings, and that the eighteenth annual meeting of our Association shall prove to be the most successful Convention we have yet held. (Applause.)

COMMITTEES.

The President then submitted the following as committees, which were adopted :

Business.—Mayor Cowan, Gananoque ; R. G. Murphy, Elgin ; D. Derbyshire, Brockville ; and George Taylor, M.P., Gananoque.

Nominations.—Henry Wade, Toronto ; James Whitton, Wellman's Corners ; Edward Kidd, North Gower.

Finance.—R. G. Murphy, Elgin ; Henry Wade, Toronto ; and John McTavish, Vancamp.

Legislation.—William Eager, Morrisburg ; E. J. Madden, Newburg ; D. M. Macpherson, M.P.P., Lancaster.

IN MEMORIAM: J. T. WARRINGTON, JR.

Moved by D. Derbyshire, seconded by R. G. Murphy, and carried: "That the Dairymen's Association of Eastern Ontario desires to place on record its sincere regret at the sad death of the late Mr. John T. Warrington, jr., cheese exporter, of Belleville, and ex-president of this Association. During the number of years he has been in that industry he has, by his uniform courtesy, gained the highest respect and cordial friendship of the entire community where he lived. Questions affecting the cheese industry of the country have at all times received an active and intelligent consideration from him, and his mature judgment, joined to many years of practical experience, has been of great value to Ontario. We, his colleagues, feel deeply the breaking of the links that have bound us in many years of true and loyal friendship.

"Therefore, be it resolved that our heartfelt sympathy and condolence is hereby extended to the widow and family of our late colleague in their great bereavement, and we trust that God in His wisdom will be a husband to the widow and a father to the fatherless.

"And further, that this resolution be recorded in the minutes of this Association, and that an engrossed copy signed by the President and Secretary be sent to the widow and family."

A WELCOME TO BROCKVILLE SECTION.

Mr. D. Derbyshire, being called upon said: I congratulate you, Mr. President, on the very thoughtful address just delivered, and I fully agree with you that this section has always been active and energetic in promoting advanced dairying. Some have taken exception to an address I delivered some years ago, when I stated that this section was the original home of the modern dairy, but I boldly affirm that Philip Wing manufactured cheese at Farmersville (now called Athens), in this the county of Leeds, in 1860, four years before Harvey Farrington started at Norwich, in Oxford county, and this county still maintains the lead in quality and quantity. We have to-day in the county of Leeds some of the largest and best conducted factories on the continent of America. In this county most of the cows are carefully housed and fed and kept for profit, the average cheese factory is nearly perfect in architecture and heated by steam, with the apparatus the best and with an educated cheese-maker in charge. The cheese are sold each week, and are not held until out of condition, and here more money has been realized than any other section on this continent. This is the great Brockville section. (Laughter and applause.) But I must not conceal from you, sir, that we have some common factories, a few ordinary cheese-makers and a few salesmen who always hold for a rise and generally get left and who injure our reputation by sending three months cheese forward at once, all mixed up. No wonder our English friends want cheese dated. The policy for us to adopt is, as far as practicable, to have large factories, first-class men in charge, sell regularly and we can easily lead the world. I agree with you that when our government has made such liberal provisions for educating our cheese-makers that al should avail themselves of a through dairy education. It is a short-sighted policy to hire a man because he will work for low wages, and then have to follow his cheese all the year. I was glad to hear you say that the season's operations in this great national industry had been satisfactory. In twenty-eight years we have had only one season that cheese went below the paying basis, and, I am sure this is a grand showing. Of no other industry in this fair land can this be said. We all feel proud of our standing, and the work of this Association has been the main factor in bringing about these grand results. I am glad that you have noticed the enthusiasm of our people. Your local committee was met by business people in a business way, which really made the work a great pleasure to us, and as you say, is a great credit to Gananoque. And now, sir, I welcome you and all the delegates to our eastern section, and trust that our meeting here, will be profitable as well as a great pleasure to you all and that we will all see this Association and its great mission of building up our cheese industry in this section prosper under your direction.

FIRST DAY—AFTERNOON SESSION.

President CARLAW called the Convention to order at two p. m., at which hour there was a most encouraging attendance.

WELCOME BY THE MAYOR OF GANANOQUE.

Mr. O. D. COWAN, mayor of the town, took the platform and read the following address:

To the President, Directors and Members of The Eastern Ontario Dairymen's Association:

GENTLEMEN,—On behalf of the citizens of Gananoque, it is my pleasing duty to extend to you, one and all, a cordial welcome to the town. We esteem it an honor that you have selected this place for your annual meeting; and we trust that your experiencet here will furnish no cause for regret at that choice.

We recognize your Association as one that has a national importance, dealing as it does with a principal product of the country, and involving large agricultural and commercial interests. We heartily congratulate you on the success which you have achieved; and we shared with you the pride which all Canadians must have felt at your magnificent exhibit of dairy products at the World's Fair in 1893, and the leading position which those products were awarded in competition with other and older countries. That the position thus secured shall be maintained and advanced, we conceive to be your peculiar duty; and we are confident that the responsibility thus imposed will be faithfully discharged, to the best interest of those you represent, and the credit of the province.

As citizens of a town largely engaged in manufacturing pursuits, we are interested in every industry that stimulates trade or adds to the wealth of the country; and we regard it as one of the surest means of promoting the general welfare, that all classes and trade should co-operate in developing and advancing the particular interest of each.

We are gratified at the intelligent and continued methods that have been adopted by the Dominion and Provincial Governments for the development of agricultural and dairy resources. The experimental farms, Agricultural College, farmer's institutes, travelling dairies, and, especially, the engaging of talented and experienced gentlemen as teachers, are each and all means to be commended, and must result in great benefit to the agricultural community, and indirectly to the people generally. And not the least amongst the educational instrumentalities is the Association which we greet to day, and to which we are indebted for your presence and that of the distinguished gentlemen whose names appear upon your programme.

Trusting that your annual meeting of 1895 may prove one of great profit and advantage to your Association and the interests it represents; and that you may carry away with you kindly memories of your visit to our town, I again bid you welcome to Gananoque.

President CARLAW replied as follows: It gives me a great deal of pleasure to meet with you at this annual meeting of our Association. I am glad our Convention is held this year in the thriving town of Gananoque, so beautifully situated on the bank of our noble St. Lawrence. The town has been long noted for its manufacturing industries, while its commodious churches, excellent high and public schools, public library, charitable and benevolent societies, opera house, halls and other public buildings which have been so kindly shown to us since we came here, clearly prove that the religious, social and educational standing of the people is very high.

A FIGHT FOR PURE BUTTER AND CHEESE IN CANADA.

Mr. George Taylor, M.P., being called upon for an address, said : Representing as I do the banner county of Canada for the production of cheese, it is a source of satisfaction to me when I speak in public to refer to the fact that the county of Leeds leads in the great dairying industry. With our worthy mayor, I join in extending to you all a cordial welcome to our town and our county. These gatherings have no political significance—certainly there is nothing of a party character about them. We meet here solely for the purpose of advancing the great dairying industry, and our discussions are not for furthering the ends of party politics. For the time being we will be all Conservative-Reformers or Reform-Conservatives, just as you prefer it. (Laughter and applause).: You are in my constituency at present, and it is a source of pride for me to know that Leeds is in the first rank of this great cheese-making industry. In a recent bulletin entitled, " Dairying in Ontario," the Ontario Department of Agriculture places Leeds at the lead of the list as having 76 factories in 1892. The value of the cheese made at these factories was $807,860—a splendid showing for one county. Leeds has an area of only 472,560 acres and a population of 21,715, and made an average of $37 worth of cheese per head. If the other sixteen cheese counties equalled Leeds per head of their population the total value of cheese made in the province would be increased by $7,500,000. While the 48,600 patrons of cheese factories, according to the Government report, averaged but $184 each on their cows, the 4,635 patrons in Leeds and Grenville averaged $267 each. That speaks well for the dairymen of this county. As our friend Mr. Derbyshire has told you, Leeds was the first county in Canada to undertake the making of factory cheese, and we have not only been the first in the field, but we have led the van up to the present, not only for quantity but also for quality. (Applause). I have for some years taken a lively interest in the dairying industry. About ten years ago I discovered that a large quantity of butter was being imported into Canada from the United States, upon which a duty of four cents a pound was paid. It was getting to be that our cities and towns were being supplied to a considerable extent by this American butter. I made an investigation, and found that instead of being genuine butter this imported article was a substance known as oleomargarine. I at once corresponded with a friend in Chicago, and ascertained how oleomargarine was made. At the earliest opportunity I had a resolution introduced into the House of Commons placing a prohibitive duty on this bogus butter. When I supported that resolution by a speech one of the first persons to contradict my statements was a farmer. I was laughed at by many in the House. They said it was absurd to assert that Canadians did not know butter when they saw it, or that any imitation could be palmed off upon us. However, before the session was over I not only got the Government to put a prohibitive duty on the importation of oleomargarine, but to prohibit the manufacture of it as well, so as to prevent any firm making it on this side of the line to come in competition with our genuine Canadian butter. (Applause). When I was at the World's Fair I was looking over the exhibit of the State of Ohio, and remarked to the gentleman in charge that the manufacture of oleomargarine was doing much injury to the butter business in the United States. I then asked him why they did not hinder its manufacture? He simply said : "There's too much money behind it." The next thing that presented itself as requiring attention in the interest of the dairymen of this country was the importation of American cheese for export to Great Britain. I considered it but fair to our own superior makers that such cheese should be branded so that it could not be mistaken for the Canadian article. I brought the matter up in the House, and again found opposition to my suggestion. It was voted down that session, but I made it a point to bring it up at the commencement of the next session. During the interval I had written to England, and had received assurances that injury was being done to Canadian cheese by inferior cheese from the United States being imported into Great Britain from Canada. The steamer Idaho went ashore, and when the American cheese with which she was loaded was examined every box was found to be branded as full cream Canadian cheese. After that the Government agreed with me that every box of American cheese passing through Canada had to be branded, so as to distinguish it from the Canadian article. The exporters have since come to see that it is an advantage to have American cheese so branded. In fact one exporter has said that nothing has contributed more to keep up the quality and price of Canadian cheese so steady than this matter of branding our neighbor's article. It is surprising to observe the quantity of American cheese passing through Canada. It is well for us that our English friends can now know that our cheese is honest Canadian goods. From the 1st of May to the 1st of December last, 191,899 boxes of American cheese passed through the Canadian Customs, for shipment to England, but all these were branded before they left the port of Montreal as being manufactured in the United States—and that is a land where there is a good deal of bogus cheese. There has been an agitation also for an inspection of cheese. When I brought up the matter in the House, Mr. McMillan, of South Huron, stated that this was a thing the farmers took into their own hands, as the cheese was generally sold at the factory, and before it left the station. Might not an inspector examine a cheese, and if satisfied with its general quality merely brand it as a full cream factory cheese? That should be enough to satisfy the average croaker. It is nearly impossible to have more than one such simple standard of inspection. Another grievance of those in the cheese business was regarding the question of weights. Sometimes the cheese was weighed at the factory and shipped to Montreal, and there it was declared to be short in weight. I pressed this matter upon the Government, and as a consequence they appointed the head inspector of weights and measures as referee in case of a dispute between buyer and seller. A gentleman came to me last year and said that while he was careful about the weight of his cheese when leaving the factory, every time he shipped to Montreal he found himself credited one or two pounds short on each box. More careful weighing and boxing is needed. The fault is sometimes because of the size of the boxes.

Mr. ASHLEY: Why not weigh the cheese when the factory man draws them in?

Mr. TAYLOR: That is a question for mutual agreement. It is my intention at the opening of the next session of Parliament to ask for further legislation in reference to the cheese industry. We have a reputation to establish. This cold storage system has brought into existence a new state of affairs in the cheese trade. Cheese made in May can now be kept until September in as good a state of preservation apparently as when first turned out. A lively discussion is now going on in England in connection with needed legislation, in order that Canadians may continue to have the good reputation we gained there. And here let me quote the following from the leading dairy organ of the United States—published in Wisconsin:

> "Mr. N. Simon, of Neenah, Wis., who won such a fine reputation for the making of full cream cheese at the Columbian World's Fair, went to England the past summer to see what he could do in making a market for the fine goods he is making. Let it be remembered that he was in a market largely possessed by Wisconsin cheese only a few years since. The spirit and response he met with was disheartening, and may be stated in the words used by a Liverpool dealer, 'We want no more to do with with your Wisconsin cheese-makers. We have tried you and have been swindled. You will send us a few fine cheese, and then the first we know you dump a lot of filled cheese on us. We shall trade no more with men who cheat and defraud. When we want good cheese we send to Canada. What is true of the English market will soon become true of the best home market. 'A bad name is soon known to all the earth,' says the old proverb.'"

Now, it is the duty not only of the cheese-makers, but of all engaged in the industry, to see to it that the reputation of our cheese is maintained in that great market across the sea. That we are not entirely free from suspicion may be seen from the following cable despatch to a Montreal paper:

> "LONDON, Nov. 16th.—A meeting of the British commission merchants who import Canadian cheese has been called for an early date to protest against alleged frauds said to be perpetrated on the trade by some of the Canadian shippers. These people it is said, are sending out summer-made cheese labelled as September made, and thereby securing a much higher price for a much inferior article. Such actions on the part of Canadian shippers are, it is represented, sure to imperil Canada's cheese trade with the British Islands, as well as other European countries. A deputation is to wait on Sir Charles Tupper, Canada's High Commissioner and request that the Dominion Government legislate forthwith to ensure that each cheese, instead of each

boy, be branded with the date of making. A London dealer to-day purchased 12,000 cheese of the maritime province make."

The exporters deny any attempt at fraud, and say the responsibility must rest with the producers, as some of the latter keep their cheese in cold storage and do not send it on until later in the season, and thus June cheese has been sold as September. I hope to get legislation through Parliament making it compulsory for every cheese producer to brand each cheese within three days after it is taken from the hoops with the name, etc., of the factory and the day of the month the cheese was made. I believe also that cheese inspectors should visit factories, and if they find any failing to brand cheese within the three days' limit they should summon the persons responsible before a magistrate, and such parties, if guilty, should be liable to a fine and imprisonment. Putting the cheese into cold storage for any length of time is a fraud upon the consumer; it is certainly a fraud when June cheese is sold for September make. After a few remarks of a complimentary nature regarding the mutual relations of the visiting members of the Association and the citizens of Gananoque, Mr. Taylor resumed his seat amidst applause.

THINGS NEW AND OLD REGARDING THE CHEESE TRADE.

Mr. D. Derbyshire expressed his pleasure in again meeting with the dairymen of the more eastern section of the Association limits, and complimented Gananoque upon the great pains taken by all to give a warm reception to the visiting members. This is the eighteenth annual Convention of the Eastern Dairymen's Association, and much has been accomplished by us since its formation. But the greatest advance has been accomplished during the latter half of these eighteen years. When we met in the city of Kingston nine years ago not a solitary reporter put in an appearance, nor did one city official come to see us. We were utterly ignored; we were an unknown quantity in the thoughts of the press and public of that district. But we have persevered in asserting ourselves, and two years ago at Kingston we were splendidly received by the mayor and citizens of the old limestone city. And we will continue to insist upon getting recognition. Dairying is the most important industry we have in Canada to-day. In the Province of Ontario we have a capital of $175,000,000 invested in this great branch of agriculture—in lands, cattle, factories and apparatus. Look at the immense number of people engaged in it. During the year we have exported 1,725,000 boxes of cheese while our neighbors on the other side of the river have exported but 1,319,000 boxes. (Applause). This "cold Canada" of ours, as those in the United States so often call the Dominion, exports about one-third more cheese than our Yankee friends do, and the goods are of better quality and fetch a better price in the British markets. And we are going to make a still finer article, but we must see to it that it goes forward every week in the very best condition. If our cheese continue to be the best, and are sold early and in their best condition, we are sure of getting the highest price; but our American cousins are not going to let us keep the lead without a struggle. The cheese which went forward promptly this year did not give us much trouble, but the June cheese held until September or October, or August cheese until October or November, in the hope of getting an extra cent a pound did much injury to the trade and to the reputation of our genuine fall cheese. The moment these cheese arrived in England they were an injury. Why? Because one lot was say an August cheese and was now off flavor, and the other was a November cheese not properly cured. A mixed cargo of that sort is likely to be thrust aside by the experienced dealer, to the injury of the good cheese shipped with the inferior, and so our goods may get a bad name. We must make the finest article, and see to it that it goes forward directly and regularly. (Applause.) Doing this we will stand on a solid rock which nothing can move. We appreciate all that Mr. Taylor has done in the House of Commons in the interests of dairying. He has been active, and properly so, because he wants the support of the people of this great cheese producing county of Leeds. (Laughter). Both the Ontario and Dominion Governments have done a good deal for us, and their endeavors have borne much fruit. But we do not want to do too much parliamentary tinkering. We do need, however, to educate our farmers to get a larger quantity of milk daily per cow, and to develop cows which will milk fully ten months in the year; to make cheese in the summer and butter in the winter. We cannot make good cheese in the winter, for milk that has been chilled cannot make cheese of a fine, silky texture and of a first-class flavor. But while winter cheese-making will not pay, winter butter-making can, and does. In this way butter can supplement cheese. The winter creamery is a good ally of the cheese business, making a paying avenue for the winter milk. Regarding the importation of American cheese for export to England, I may say that I have bought American cheese every year. I have purchased some this year, and will while I can make money out of it. Now, do not make a mistake about the quality of the cheese made in the State of New York. Some of our friends over there have been making as good cheese as those of the famous Brockville section. They have got some of our best Canadian cheese-makers, and in many factories a really first-class article is made. But if you go further south, away from the border they skim the milk, and they have a cheese lined with lard or something else and call it a filled cheese. That is a quality of cheese that should be done away with. I am in favor of the branding system. Before it was brought in by law I had a stencil, and branded imported cheese in bold letters: "The product of the United States," and that brand was in demand across the water. You may put a brand "Full cream cheese" on a consignment, but if it is not a good cheese, but a poor, stinking article, the name will not sell it. I am glad to know that we are to have another dairy school. I every day see more and more the necessity of training men to handle our new machinery and apparatus. Why should not every cheese-maker in the Brockville section be requested to attend at least one term—only a fortnight—at the Kingston Dairy School? Say to every new applicant, at least, "We will hire you and pay you a good salary if you are a competent man and have attended one of our dairy schools. It will cost you only a little more to board at Guelph or Kingston than it will to hang around home." I desire again to emphasize the fact that it is ruinous to hold cheese.

Mr. TAYLOR, M.P.: Would it not be in the interest of everyone concerned to have cheese dated? In that case they would not hold June cheese, but would ship their early summer make week by week. Would that not have a tendency to make them sell?

Mr. DERBYSHIRE: Some of these men cannot be held by an Act of Parliament. (Laughter). Let them experience another year or two like this, and have the salutary lesson of losing a cent a pound by holding. That will do more for them than any legislation. It is wise to sell the cheese as early as possible, and that also gets the money all the sooner in circulation.

Mr. WHITTON: Don't you think it would be a very good move, now that we have dairy schools at Guelph and Kingston, to bring it about some way or another so that our cheese-makers would have to attend one or another of these schools and pass an examination for first, second or third class certificate before any of them could get a factory?

MR. DERBYSHIRE: That would be an important move. But what about the old man? Would you turn him away? Would you put him in competition with a new man just because you could get the latter cheaper?

Mr. ASHLEY: What penalty would you inflict upon buyers who hold cheese? In your section it is not the sellers but the buyers who offend in this respect?

Mr. DERBYSHIRE: They have men in England who are just as peculiar as the men here. They have a man in Liverpool who looks after June cheese every year and gets it all at once. Some here prefer our June and July cheese for their winter trade. This old country dealer I speak of will buy 10,000 boxes of June cheese. We will draw upon him and get the money, and will put them into cold storage, or an ice-house, if need be, and let him take them as he wants them. I do not think any exporter at Montreal or anywhere else holds any June cheese except under such circumstances.

Mr. WHITTON: I am pleased with Mr. Derbyshire's explanation. I am satisfied that the exporters do not hold on their own account, but on account of the English buyers, and if the Englishmen prefer it that way it is their own lookout.

REPORT OF INSTRUCTOR ROLLINS.

GANANOQUE, Jan. 2, 1895.

I herewith submit my sixth annual report as instructor and inspector for the Eastern Dairymen's Association for the season of 1894. The district allotted to me was the same as last season, comprising the territory between Deseronto and Gananoque.

I visited 68 factories from one to five days as required, as far as time would allow. The factories and number of visits are as follows :

Factory,	Visits.	Factory.	Visits.	Factory.	Visits.
Crow Lake	1	Clare View	2	Duff	2
Hartingdon	1	Tamworth	2	Glenburnie	2
Model	2	Newburgh	3	Farmer's Friend	2
Perth Road	1	Bath	1	Pine Hill	1
Excelsior	1	Conway	2	Maple Leaf	1
Sunbury	1	Sillsville	2	Pine Grove	1
Wolfe Island	1	Moscow	2	Cold Springs	2
Union	2	Albert	1	St. Lawrence	1
Sand Hill	2	Money More	1	Gilt Edge	2
Deseronto	3	Jackson	1	Bear Creek	1
Enterprise	5	Excelsior	2	Cold Springs	2
Sheffield	3	Lake Shore	3	Leo Lake	1
Croydon	5	Granite Hill	2	Woodburn	1
Centerville	4	Morning Star	1	Central	1
Camden East	3	Rose Hill	1	Thousand Island	2
Whitman Creek	2	Keenan & Son	2	Harrowsmith	2
Forest Mills	2	Arigan	2	Verona	1
Napanee	3	Cataraqui	2	Parham	1
Platt	3	North Shore	2	Sharbot Lake	1
Odessa	2	Battersea	1	Oso	1
Metzler	2	Forest	2	Mountain Grove	2
Empy Hill	3	Glenvale	2	Tichborne	1
Marlbank	1	Railton	2		

Of the 144 days comprising the season, 125 were spent testing milk and giving instruction, 4 days attending cheese boards, 15 days travelling and calling at factories to give instructions, stopping from one hour to half a day. I made thirty visits of this kind ; part of this time I was detained from testing milk on account of rain.

The amount of money contributed by factorymen for my services was $437.

I tested 7,200 samples of milk. The number of people found tampering with their milk was about 15. Amount received from fines, $150. Time spent in attending to same, twenty days ; cost (paid) $85.

I am pleased to report that the cheese in Napanee and Kingston, the past season, with a few exceptions were fine. Some of our best cheese-makers sometimes go wrong and can't help it, but those are easily put right.

I have found cheese wrong from the thermometer being too low, but never from being too high. Many cheese-makers are inclined to heat too high. I think that from 95° to 97° or 98° will give better results than at 100° to 104°. Now every cheese-maker should have a correct thermometer and know just what he is doing all the time.

I find another cause for some going wrong is the rennet getting weak without them knowing it, and then they ripen the milk too much, and don't use enough rennet, and don't get time to cook or do anything but make sour cheese. Ripening milk too much or taking it in too ripe is a detriment, both as to quantity and quality. One evil resulting from this practice is, they usually stir the milk too much and cream will rise that cannot be got into cheese. They do not take time to cut as slowly and carefully as they should, and have to heat their vats too fast and the results are less and poorer cheese.

If they set sweeter and work slowly for the first hour and a half they will get through just as early, and will not have any more trouble with gas than by souring their milk too much.

A FEW DONT'S FOR CHEESE-MAKERS.

Don't wash the knives and rakes or anything else in the water barrel.

Don't have to go out for wood after the milk starts to come in ; always have a day's wood in the boiler-house over night.

Don't rinse your utensils with boiling water until after they are washed, and don't neglect to use plenty of boiling water then.

Don't use a dish-cloth in your factory, but use a brush.

Don't wear greasy clothes or allow anything in your factory to get dirty.

Don't put a greasy cloth on your cheese; it will come off and your cheese will crack.

Don't put your curd to press too hot, as your cheese are liable to spring when they go in the curing room.

Don't press your cheese too hard at first.

Don't run a factory without a wash-tub and wash-dish, clean towels and soap.

Don't leave too much moisture in your cheese, for in hot weather they will get off flavor and in the fall they will get pasty.

Don't neglect to turn and trim your cheese every morning while in the hoops.

All of which is respectfully submitted.

R. Rollins.

Mr. Rollins, after reading his report, stated that the reason rennet is weaker late in the season than at the beginning is because of the specific gravity of the fluid. It is a brine, and needs shaking or else the greater strength will go to the bottom, and as the tap is generally down there the first portion of the rennet is likely to be stronger than the last.

Mr. Derbyshire: Rennet also becomes weak on account of exposure to the air. Draw out only a gallon of rennet at a time, and use as required.

Instructor Rollins: I quite agree with that. I would also urge slow and carefnl cooking.

Mr. Whitton: This matter of handling rennet is like many other things in the cheese business—people have been economizing in a wrong direction. Cheese-makers have been in the habit of buying too large a quantity, and placing it in a convenient place where they could draw it off with but little trouble. Rennet has to be kept with salt, and the strength of the rennet goes to the bottom. The maker says, "That was very good when I got it, but now it is poor; they have been working off a fraud upon me." Keep the rennet agitated before and while being drawn, and don't expose it too much. I am glad this very important matter has been brought before us to-day.

Instructor Rollins: You cannot make cheese in all localities by a watch. If the vat is inclined to be greasy do not wait, but go on and mill the curd, and when it works down velvety, salt and go right on. I think we will never be entirely rid of gassy curd. We must be careful with each separate lot of milk. Much depends upon the physical condition of the cow. I remember the case of a cow that gave bad milk one spring. The next year at the same time she also gave bad milk. When she was coming in the following year I gave her a dose of salts which purged her system and we got sweet milk after that.

Mr. Bradley: What about the cream that rises to the top of the cans when the milk is kept over? Will that be incorporated in the cheese?

Instructor Rollins: Yes, if sweet. If sour, do not bring it to the factory.

Mr. Bradley: I ask this on account of a machine I saw for agitating milk to prevent the cream rising to the surface.

Instructor Rollins: By keeping the milk agitated it permits the animal odors to escape. The cream rising to the surface, on the contrary, seals over the milk and prevents these objectionable odors escaping. It is not a good thing to retain the animal odor in the milk.

Mr. Bradley: I have often wondered why some cheese-makers could have their cheese made and hooped before others. One man—a fellow from the other side—could have his cheese made and be down in the village and be decently drunk before any other cheese-makers could get out. (Laughter.)

A Member: Is the milk that goes in on Monday morning as good for cheese-making as that which goes in on other days?

Instructor Rollins: If properly handled it is just about as good.

A MEMBER : Some makers argue that it is no use to send the Saturday night's milk ; you might as well skim it.

Instructor ROLLINS : They have another object than the mere fact that the cream cannot be incorporated. If the cream is sweet it will go back into the milk again.

Mr. DUFF : I would like to hear you a little more fully regarding a " starter."

Instructor ROLLINS : There is a danger of keeping far too much milk over for a starter. Use a couple of gallons of milk of the day before, and you might add a little water if it is too sour. Some use two or three pails of sour milk, and the consequence is they never get their vat into proper condition, and much that is valuable in the milk goes out into the whey vat. I don't like to use thick milk at all. A little sour milk may be used but not enough to work the vat fast.

REPORT OF INSTRUCTOR BENSLEY.

I herewith submit my second annual report for the season 1894 as Instructor and Inspector for the "Eastern Dairymen's Association."

The district allotted to me was part of the counties of Hastings, Northumberland and Prince Edward, but principally Hastings county. The factories and the number of visits each received are as follows :

Factory.	Visits.	Factory.	Visits.	Factory.	Visits.
Warkworth	3	Wellman's Corners	1	Eclipse	2
Holloway	2	Wooler	2	Springfield	2
Grove	2	Brickley	2	Standard	2
Sydney Town Hall	2	Bay Side	2	Thurlow	2
Shannonville	2	Mountain	2	Melrose	2
Bronk	2	East Hastings	2	Ashley	2
Central	2	Valley	2	Round Lake	1
Trent Bridge	1	Deloro	2	Riverside	2
Spry	2	Spring Brook	2	Weller's Bay	1
Quinté	1	Frankford	1	Maple Leaf	2
Ryleston	2	Monarch	2	Evergreen	2
Enterprise	2	Shamrock	2	West Huntingdon	2
Glen	2	Victoria	2	Cedar	2
Roblin	2	Premier	2	Thomasburg	2
Moira Valley	2	Moira	2	Zion	2
Rosebud	2	Roslin	2	Plainfield	2
Roger	2	Brighton and Murray	2	Cedar Hill	2
Codrington	2	Gwynne	2	Salem	2
Cramahe	2	Hilton	2	Castleton	1
Wicklow	1	Grafton	1		

Of the 123 days spent in the service of the Association 110, were used in testing milk and giving instructions and 13 days travelling.

The number of samples tested during the season was 6,500. Of that number I found but 32 samples deteriorated—11 were skimmed and in the case of the other 21 samples water had been added.

All of the offending parties were dealt with by the officials of the different factories. I might just say here, if the patrons would be more particular in the care of their milk at home it would be profitable to themselves and very beneficial to the cheese-maker. As cheese-making is the same as any other business, it requires first-class material to make a first-class article.

I found the majority of the factories in a very good condition as regards cleanliness, but as far as convenience is concerned there is considerable room for improvement in many of them.

Yours respectfully,
G. H. BENSLEY.

Warkworth, January 1st, 1895.

REPORT OF INSTRUCTOR PUBLOW.

I have much pleasure in submitting to this Association my sixth annual report of the work accomplished in the district allotted to me.

As most of you are aware, at a meeting of the directors, held at Brockville last April, arrangement was made to give me an assistant for the year just now closing, as the applications from factories in previous years had been more than any one man could overtake in a season and do justice to the work.

This report, therefore, will include the work done by Mr. McCann, (my assistant), and myself.

One hundred and twenty factories applied for instruction and of these 109 received in all 237 visits as follows:

Factory.	Visits.
Elm Grove	3
Salem	3
Riverside	5
Oak Leaf	1
Leeds Union	3
D. and E.	3
S. L. U.	1
Osceola	2
Clyde	4
Tay Banks	3
Lakeview	3
Fermoy	2
I. J. F.	3
Westport	3
Ardmore	3
Maple Grove	1
Rockdale	1
Phillipsville	3
Dexter	1
Rideau Queen	1
Drummond	3
Royal Dominion	1
Willow	2
Algonquin	1
Palace	1
Montague	2
Farmer's Friend	1
Farmer's Choice	2
Plum Hollow	3
Smith's Valley	3
Grand Central	3
Dominion	1
Island City	1
Mountain View	1
Rosebank	2
Watson's Corners	3
Scott's	1
North Rideau	1
Roebuck	1
Grenville	1
Leader	1
Star	2
Anvern	2
Lone Star	1
Centreville	3
Bedford Mills	3
Ontario	3
Elgin Model	3
Clear Spring	3
Augusta Model	3
Frankville	4
Silver Creek	1
Robinson's Mills	2
New Bliss	1
Lakeview	2
Cold Glen	2
Springvale	2
Morton	3
Forfar	1
Mississippi	5
Clayton	2
Union Pride	2
Riverview	2
Carp	1
Ottawa Valley	1
Golden	1
Prospect	1
Valley Queen	1
Appleton	1
Boyd's	2
Hopetown	3
Balderson's	1
Poland	3
Brookside	3
Zealand	1
Maberly	3
Bolingbroke	1
North Shore	3
Clear Lake	4
Seeley's Bay	2
Gilt Edge	2
Holland	2
Mallory	2
Lily Spring	1
Glen Buell	1
Farmersville	2
Barlow	3
Manotick	1
Bonchere Valley	2
Maple Home	3
Mountain	4
Rankin	1
Snake River	1
Union Star	1
Equal Rights	3
Pakenham	3
Clairview	3
Middleville	3
Farmer's Friend	3
Rockspring	1
St. Lawrence	1
Fairfax	2
Deer Lake	1
Fairplay	1
Lyndhurst	3
Farmer's Own	1
Stanleyville	3
Victoria	3
Reliable	3
I. X. L.	2
New Glasgow	1
Beckwith	1
Bruce	1
Lombardy	1
Sharbot Lake	1
Burnstown	1

Comparing these figures with those of last year, it will be seen that more than twice as many visits have been made.

In accomplishing this work Mr. McCann spent 108 days and myself 167—making a total of 275 days in the Association's employ.

Mr. McCann accompanied me during the first two weeks, preparatory to starting out himself, receiving for this time his expenses only. He did good work, giving almost universal satisfaction, and more especially during the latter part of the season.

It was agreed at the meeting of the directors, to which I have already referred, that factories receiving one visit only should be charged $5 and those receiving three visits $10. In some cases where applications were made for three visits, it was impossible to overtake them. However, the factories have contributed liberally, showing thus their appreciation of the efforts of the Association to raise the standard of cheese. The amount contributed by factorymen for instruction and inspection was $880 and the net amount from fines $224, making a total to the Association of $1,104.

The number of patrons fined for sending deteriorated milk was 21 and in all cases fines were paid, although the services of a lawyer were required for four, and some of them for the third offence.

One instance I will mention here in order to show something of the necessity there is for factorymen paying for milk according to quality. At one factory a sample tested 1.2 per cent. of fat and was at once known to be only skim milk. I did not say anything to the man just then, but immediately followed him home seeking evidence of his guilt. There I found 50 pounds of cream which tested 12 per cent. fat and also the morning's milking and the two previous ones which tested 4.5 per cent. fat. The man denied all knowledge of it until his own footprints from the milkhouse to the wagon were discovered, showing he had made frequent trips, then he admitted his guilt and paid the full penalty. In every case the utmost care was taken to prove the innocence or guilt of the parties suspected. You may readily understand how very unpleasant this part of the work is, and also see the necessity for adopting the method above referred to.

Considerable fault was found with the cheese from one part of the section this year, and justly so. This may be attributed to two causes : one, that makers were too anxious to make a high average, leaving too much moisture in the cheese and thus causing the body to be weak and pasty. In the other case makers allowed the milk to become over-ripe before adding rennet, making the cheese soft in body with an acid cut texture, a bad flavor, and poor keeping quality, or what is known to the trade as a soft, acid cheese. Such cheese is not what is required by the markets of to-day, as has been experienced by many makers this year. Probably this has been brought about by factorymen being too anxious to ship their cheese while very young, and in fact we know of factories shipping up to within one day of the hoops, which I consider an outrage to the business.

In visiting some of these factories and making cheese, it was nothing unusual for a cheese-maker to remark : "Well, I think your system will make fine cheese, but I think it will take more milk, and will not be so soon ready for market." Buyers are to blame for accepting cheese shipped too young. Cheese, properly made, should not be shipped under ten days, when they should bore close and firm, with a heavy body, flinty texture, clean flavor and a neat, attractive appearance. I would strongly recommend cheese-makers to manufacture cheese of this quality until the market demands something different from what it does to-day.

During the season I had the pleasure of Mr. J. B. Harris, (an instructor at one time in this district), with me for eight days visiting in the Perth section. He frequently expressed himself as surprised with the uniform fine quality of the cheese in these factories, and advised the makers to continue the present system of manufacture.

In conclusion I would urge that more attention be paid to the general style of cheese—carelessness in finish being very noticeable in many instances this year ; also that factories be kept much cleaner. There is no acceptable excuse for anything approaching carelessness or uncleanliness in the dairy business, either with the maker at the factory or the patron at home.

All of which is respectfully submitted.

G. G. PUBLOW.

Mr. SANDERSON : What would you call a high average?

Instructor PUBLOW : That would depend upon how your milk tested. We would this season say that about 10¼ pounds of milk was required to make a pound of cheese. But we have factories which have made a pound of cheese for every 9.90 pounds of milk.

Instructor BENSLEY : Was that done honestly? This season the average has been nearer 11 than 10.

Instructor PUBLOW : The cheese was a little too moist perhaps in the last named factories. We find that where the milk is carefully and honestly weighed the average is about 10¼ pounds of milk to a pound of cheese. Where the factories are run over six months about 10½ is the average.

Mr. RICHARDSON : Is it possible to get as much milk from the Saturday's milk kept till Monday as from fresh milk?

Instructor PUBLOW : Yes, if the milk has been properly kept. One day Mr. McEwan and I made cheese in a certain factory, and we made two tests of the milk. We made from Saturday and Sunday morning's milk, and had it manufactured by itself. We found that there was scarcely any difference in weight from cheese made from fresh milk, and the two milkings gave us an average of 3.10 per cent. of butter-fat. I never worked a vat of milk that gave me better satisfaction. It was worked very soon. The old milk has given me better satisfaction than the Sunday night and Monday morning's milking. Milk cleanly; aerate the milk until you get rid of the animal odor, and lower its temperature to that of the atmosphere, and keep it at that. Do not cool down to 60 ° and then go up to 70 °. Do not stir after that. Do all the stirring at the very first—immediately after milking. There is little or nothing to he gained by stirring milk two hours after it comes from the cow. If you keep stirring all the time it is apt to hurt the grain.

Mr. F. Dawson: Can you get as good a result from cold water as from hot water in the Babcock test?

Instructor Publow: You will get a bigger reading from cold water, but it would not be correct. I would not recommend cold water in the Babcock test. Having the water as near boiling point as possible will give the best results.

Mr. Connor: Is the cheese proportionately rich according to butter-fat?

Instructor Publow: Cheese from milk containing 5 per cent. of butter-fat should be worth more than that from milk having only 2.5. But it is seldom there is that amount of variation. In fact I have found that in a herd of say six or eight cows the average per cent. of butter-fat will not differ more than a half of one per cent. from the average of the factory.

Mr. Bailey: Some of the best of our cheese-makers in the western part of the Association limits have been discharged this year because they took so high an average of milk to make a pound of cheese, and they have been honest makers. Patrons should not look so much to the average. This matter is killing some of our best makers.

Instructor Publow: That is just the trouble in our section also. There is too much competition between factories. My advice to every maker is: Weigh your cheese honestly and make your cheese fine. You cannot make really fine cheese with less than 10¼ to 10½ pounds of milk to the pound of cheese from milk testing on an average 3½ per cent.

Mr. Halliday: What time should elapse between the time the milk is coagulated and the whey is drawn off?

Instructor Publow: About three hours.

Mr. Halliday: Do you think that moisture is incorporated or expelled according to the amount of rennet, or does that depend upon the working?

Instructor Publow: I think the matter of moisture is controlled more by hand work. But if your milk is old or more than ripe, add more rennet. However, if the milk is over ripe no matter how much rennet you put in you cannot get the acid out, and the cheese made from such a lot of milk will be a poor keeping article. If shipped soon after making, that cheese would pass the buyer, but in a few weeks it would be almost certain to go bad. In the case of such milk, cook your curd slowly. Set your milk early so that it will run off in three hours. Use plenty of rennet, cut fine and go on stirring your curd before you apply the steam.

Mr. Nelson: What about gassy milk?

Instructor Publow: I can make as much cheese out of gassy milk as from good milk.

Mr. Murphy: What about washing curds?

Instructor Publow: I went to one factory this year in which they had a lot of trouble with gassy curds, and full of bad flavor and buttercups. The milk was also ripe and worked fast. Both vats were near each other. They set in eight seconds according to the rennet test. We found a lot of stinking curds and full of pinholes. The maker said to me, "You have a good day to be here." I went to his water barrel and found it clean. I said to the maker, "I will take one of these vats and handle the curd in it, and you take the other and treat it as you have been doing." I then filled one vat with water and heated up to 108°. I told the maker to cut the curd which was full of pinholes. I ground the curd and levelled up the vat, and stirred at 108°, but I did not go over 112°. I took that curd out in half an hour, ran off the whey and stirred. In an hour and a half I salted. When I went away the other man had not his curd milled, and would not for an hour. A week from that time the cheese bore as fine as I ever saw. The other cheese made from the same setting was full of buttercups and of bad flavor. My cheese was silky and of good flavor, and as sweet as a beechnut.

Mr. DERBYSHIRE: Do you claim that you can take a clean thing out of that which is unclean?

Instructor PUBLOW: Yes, in that case. I tried another curd in another factory which haired 2½ inches on the hot iron. I said, "If you grind that curd I will save you $40 to-day." I washed that sour curd in water up to 108°, and no man would ever know that that curd had been gassy. I do not advocate using gassy or stinking milk, but you need not be very much afraid of it if you have plenty of good, clean water by you.

A MEMBER: What about the yield of that washed curd?

Instructor PUBLOW: The yield is perfectly satisfactory.

Mr. HALLIDAY: Do you think there is danger of a curd becoming pasty or soft—whey-soaked—if it stands even four hours, if the whey has been drawn off properly?

Instructor PUBLOW: There is little danger in that case. It is just like in boiling potatoes. If you cook for a while at the boiling point and then let the temperature fall below that you will spoil your cooking. You must keep it up steadily to the right temperature. Anything cooked in a liquid should be kept at an even temperature.

Mr. MILNE: How long would you keep your curd in?

Instructor PUBLOW: If it is what is known as "a regular stinker," keep it in half an hour longer.

Mr. TAYLOR: You say that cheese might pass an inspector for a few days. Do you think it possible to have an inspector appointed, say at Montreal, who would prevent such cheese as that passing? I gather from what you say that the cheese might be right this week and wrong next week.

Instructor PUBLOW: That is a pretty hard thing to get over. One man may want the cheese a little softer than another, and still he cannot reject it. It is wonderful how tastes will differ regarding cheese. Ask two men what they consider a fine cheese, and it will be difficult to get them to agree. I think, however, that a fine cheese should be of good flavor, be close in body and look all right; it may be a little firm or a little soft, but if nothing else is wrong but the softness or the firmness it is not serious. No Government inspector should be appointed to inspect cheese at first hand—he should inspect only the rejected cheese. Every cheese but one rejected by the exporters during the past year, has been rejected upon its merits, so far as my personal experience has gone.

Mr. DAWSON: Here is a case worth considering. Certain factories contracted at 10¾ cents during the last two months. When they were sent down to Montreal the price was docked on account of quality. They were sent on to another man and he said, "These cheese are fine, but you will have to take a reduction." One firm in Montreal says, "These cheese are off flavor," while another dealer says, "These cheese are fine."

Mr. DERBYSHIRE: I believe that no cheese should be contracted for. Let the factories sell every week for what they can get.

Mr. DARGAVEL: When a manufacturer makes his contract with the patrons he need not guarantee the cheese; but when he sells it week by week then he should guarantee it.

Mr. DERBYSHIRE: That would be another wonderful thing to put into the law. (Laughter.)

THE FARMER AS A MANUFACTURER.

Mr. JOHN GOULD, of Aurora Station, Ohio, was introduced by the President and was warmly received. After a reference to his forty-eight hours of travel in order to reach the Convention, and the relation of some of the incidents by the way, the speaker went on to say: We talk of making cheese, of making butter and of making land over. I wish we had a factory for making men over, for I have some friends I would like to have made over again. (Laughter.) Did you ever think that the man who is upon a farm is the greatest manufacturer in the country? The man upon the farm is dealing with raw material; he is asked to make a finished product of it. Whether he knows it or not he is a manufacturer, and he must know more than one thing in order to succeed. If I hire a man to be a mechanic I send him into a shop and teach him one thing; the manufacturer on the farm must know more than one thing, and know it ahead of him. Now, what is the raw material of the farm? We bring down iron ore from lake Superior and put it through the furnaces and the mills and through different processes, and at last it comes out in the bar of iron or steel. We call that manufacturing. But did you ever think that the man who draws a load of hay or corn from the field and feeds it to a cow, and makes from that food, beef, cheese or butter, is as great or a greater manufacturer than the man who rolled the steel? There is hardly any deviation in rolling a steel rail, but the moment I come to manufacture an article, solid or liquid, from my cow, there is a war of elements. I have the weather, the condition of the land, the system and habits of the cow and other matters to deal with. The cow alone is warranted to do nothing. It is my skill that must bring anything good and profitable out of her. Take the feeding of corn. Suppose I take corn stalks and put them in the manger and say to the cow, "Give me pure milk." That corn may have 66 per cent. of water in it. I go to Prof. Dean and ask him for a balanced ration. We feed that balanced ration, but we do not know fully what comprises that balance. How many of us throughout Canada or the States know how much of protein or starch is contained in a corn stalk? The farmer must know the machine he is working with—which is the cow—and he must have a knowledge of that which is to be put into the machine—which is the food—in order to get the best results. He must also understand and practice economy. There is not an engineer on the Grand Trunk Railway who does not know the amount of coal it will take to make steam enough to draw his train, but how many of us know how much steam it takes to send the cow forward? (Applause.) Perhaps the man behind the cow has no steam in him. (Laughter.) When a great manufacturer fails we are inclined to say that it must be because he did not understand his business; and it is through the Lord's mercy that so many of us farmers do not fail, for certainly there are few of us who properly understand our business. Every manufacturer to-day is saving the odds and ends of his business, and is turning them into something valuable, and something for which there is a market. I can remember when the great Cuhoyga Mills, near Chicago, shovelled the bran into the Chicago river. My father even then held that these bran hulls were not worth more than so many fly wings. At those mills to day bran is worth $17 a ton. We should know about the material we feed to our animals, so that there will be no waste product. In our great saw mills to-day they are taking little bits of wood, before regarded as useless, and are dipping these into naphtha and selling them for kindling. Who, twenty years ago, would think of such a thing as that in an American or Canadian saw mill? The great economic study of to-day is to utilize waste product by turning it to a commercial purpose. Now, the farmer must take up these odds and ends. It is saving waste materials that pays in the shop or factory, and also on the farm. A farmer asked me what was the thing on his farm that he should pick up and save? I told him, "The hole in your stable floor." "How can I do it?" he asked. "Put in a plug," said I. "But that will make it too slippery," he answered. Then I told him that was just what was wanted. He should utilize these droppings, which were his best fertilizer, and would cost him a great deal to buy in commercial form. Ammonia comes high. The moment that man stops that hole he becomes a manufacturer. And I reiterate my assertion that every farmer is a manufacturer. He takes land and from it raises raw material, and uses his cows and steers and horses as machines to turn it into finished product from which he gets his living. If the cow is a machine, then the better the machine, and the better everything fed to that machine, the better for the owner. I believe that the farmer stands nearer to God than any other calling or profession on the face of the earth. Not that he is any more religious than any other man, for sometimes he has much to provoke him to be otherwise. We must not expect the farmer to know too much. Every man who follows the plow is not expected to be a geologist ; nor are all those who grow grain or roots expected to be botanists. But the thoughtful and observing farmer has much to instruct and interest him as he plows, and plants and reaps and gathers. Yet how many think that farming is all drudgery ? The moment we realize that we too are manufacturers, we are better able to understand the great book of nature spread out before us, and studied as it should be, this is a work that brings a reward at last.

CO-OPERATION IN DAIRY EXPERIMENTAL WORK.

Prof. **Dean**: I am to talk to-morrow about experiments in cheese-making, and I shall do little more than introduce myself now. We have in the Province of Ontario to-day two experimental farms—one at Ottawa and one at Guelph. Both of these are doing a good work for farmers and dairymen. The Ottawa station has done considerable work in connection with winter creameries and other lines. Our own farm at Guelph has also attempted certain lines of work which will be of benefit to dairymen. The object of all experimental work should be to get at truth. Bacon says that truth is a rock that stands out in the sea ; the waters flow around it and the waves beat against it, but they have no effect upon it because it stands above all these things. And so in the case of agricultural experiment stations, the main object is to get at truth, and solve the problems which now perplex us. Every dairyman cannot be an experimenter, and every cheese factory can not be experimenting, but more dairymen and more cheese factories could easily engage in experimental work. I sent 180 circulars to cheese factories last year to assist us in experimental work, and I received replies from only ten. I asked some of the remainder later on if they had made experiments, and they replied that they had not, but that they could if they had only put forth the effort. I want to say a word about the work for next year. We have in connection with the Agricultural College, at Guelph, an organization known as the Experimental Union. This Union has sent out to farmers different kinds of grain and fertilizers, and through them this year 15,000 experiments are being conducted all over the province. They now propose to ask the co-operation of the Eastern Dairymen's Association along dairy lines. Such co-operative experiments are more valuable than single experiments. I believe that with co-operative work along the lines suggested—the dairy associations, the dairy schools and the Experimental Union, all cordially uniting in the same work—the results would be most valuable. If you think it advisable to appoint a committee to deal with this matter, I know you can count on the hearty co-operation of the Experimental Union and the Government farms.

THE KINGSTON DAIRY SCHOOL.

Mr. Geo. Y. **Chown**, Treasurer of the Kingston School of Mining and Agriculture, was introduced, and said : The Governors of the School of Mining and Agriculture desire me to convey to you their hearty greetings, and place before you a brief statement of the work we hope to do in assisting you to carry on more successfully than ever before the dairy industry in eastern Ontario. In the dairy school, which we have built and equipped during the past year, we will carry on practical and theoretical instruction in cheese and butter-making. We shall give special attention to milk testing, while courses of lectures will be given on cheese and butter-making and the working of factories and creameries. Already students are doing practical work in the testing-room and in the creamery. The intention is to have eight courses each in cheese-making and in butter-making, the course lasting two weeks. Some of the students have already decided to stay two months, and nearly every student will take at least one two weeks' course each in butter-making and in cheese-making. You may ask, how have you been able to erect and equip and carry on this dairy school? Well, we have been aided by the Ontario Government both in the building of the school and in the equipment of it. It was Hon. John Dryden who suggested to members of our Board that we should carry on the work of practical dairy instruction. The Dominion Government has also aided us in the equipment and Prof. Robertson has assisted us in selecting the apparatus, etc. The Dominion Government is conducting the school this session as a Winter Dairy Station, in charge of Mr. Ruddick, Mr. Zufelt and other instructors. We have also received liberal assistance from the city of Kingston. The city council gave us a property, in the centre of the city worth $20,000, with a large building, and plenty of room for any further buildings we may desire to erect. We have also taken up a public subscription list to the extent of $36,000 as a capital or endowment fund. The Board of Governors have subscribed one-third of that amount. The Board have sent me here to ask the Association to co operate in making the school a success. We want you to feel that in a certain sense it is your school. We want you to have a representative on the Board, and thus make it in fact as well as in sentiment your own school. It as been suggested that you make your President *ex officio* a member of the Board of Governors. I may say that the school has fully recognized this Association in that in their conditions of attendance they have laid down two rules. One is that the men or women who apply for admission must have had at least one year's experience in practical cheese and butter-making, and the second is that they become members of the Eastern Dairymen's Association. Up to the present time we have received the names of 80 applicants, of whom 38 have forwarded their $1 to become members of your Association, and I shall hand your Secretary a check for this amount. The other applicants will join your Association and pay the fee as they enter the school.

As regards financial co-operation, I may say that I am not here to beg assistance, but simply to say that we have built and equipped the dairy school as economically as possible, keeping in view that it was to be a model building, and still we have "outrun the constable." If you can give us any assistance we shall be under obligation to you, but, if not, shall still feel in sympathy with you and ask you to co-operate with us in any way that may seem feasible to yourselves.

Mr. J. A. Ruddick was next introduced as the gentleman who had the practical work of the Kingston Dairy School in charge, and said: I think Mr. Chown has said all that is necessary so far as our dairy school is concerned. I will merely say a few words which may save correspondence on the part of cheese-makers present. We do not expect that our school will be a place where any man can go and learn how to make cheese and butter. No one can go there as a beginner. One of the conditions is that a person must have had at least one year's experience in either butter or cheese-making. What we want to do, therefore, is to show those who have had experience the best methods—to give them the why, the wherefore and the how of practical dairy work up to date. Many men are able to make a fairly good cheese under ordinary circumstances, but when some unusual condition occurs they find themselves utterly at sea. After all the chief lack among cheese and butter-makers is that they do not understand the theory well enough. Our school is well equipped in regard to testing of milk, and let me say here that I do not consider any man capable of taking charge of a factory who does not understand the accurate testing of milk for butter-fat. We also wish to inculcate lessons of cleanliness. We have separate classes for cheese-makers and butter-makers. The courses are two weeks each, and a man can take one, two or more courses. I believe the average length of the time spent with us will be four weeks.

The meeting then adjourned.

THE BANQUET.

In the evening the members of the Association were entertained at a complimentary banquet in Turner's Hall, tendered by the mayor and citizens of Gananoque. The local press described it as the finest affair of the kind which had ever come off in the town. About 150 persons sat down, and the tables reflected much credit upon the caterer. An orchestra discoursed sweet music. Mayor Cowan occupied the chair, and Mr. George Taylor, M. P., was vice-chairman. The speeches were by turns wise and witty; none were too long. There were no liquors. Several clergymen were present, and were among the speakers.

SECOND DAY—MORNING SESSION.

The attendance at this session was unusually large. The first speaker was Mr. F. T. Shutt, M.A., Chief Chemist at the Central Experimental Farm, Ottawa.

THE EXPERIMENTAL FARM SYSTEM.

I purpose availing myself of the opportunity afforded me this morning to present to you, by way of preface to my address as announced on the programme, a very brief account of the work, the functions and objects of the experimental farms. I trust I may be able to make clear to you, as practical farmers and dairymen, that there are distinct and direct advantages to be reaped from the experimental work in agriculture that is being carried on by the Dominion Government.

This work, so varied in its character that it embraces all the branches of agriculture, is conducted at five different points in Canada:—At Nappan, Nova Scotia; at Ottawa, Ontario; at Brandon, Manitoba; at Indian Head, North-West Territories; and at Agassiz, British Columbia. These centres of operation allow investigations and experiments to be prosecuted under the varying conditions of soil and climate found in this country.

At Ottawa—the Central Farm—there are several departments, presided over by the following officers: Director, Botanist and Entomologist, Agriculturist, Chemist, and Horticulturist. These constitute what might be called the scientific staff. It is their province to investigate the problems related to, or in any way connected with, Canadian agriculture, that may arise in the course of their own work or in the work of farmers throughout this Dominion.

I can only very briefly epitomize in speaking to you of the character and extent of these investigations; it is only possible for me now—with the short time at my disposal—to mention some of the more important features that characterize the labors of those who have this vast work in charge.

In the various branches of agriculture proper we find among other investigations the following lines of research being followed: the economical feeding of farm animals, of milch cows, steers and swine; the lessening in cost of the production of pork and milk; dairy experiments in the better and cheaper manufacture of butter and cheese; field experiments in growing nutritious fodders at a minimum cost; investigation by practical trials of the relative values of various manures and commercial fertilizers; trials with all varieties of roots and cereals.

In horticulture, perhaps one of the most prominent features of the experimental work of recent years has been the devising of fluids and methods of operation for the checking of fungous diseases of fruit and fruit-trees. This protective process here referred to is commonly known as spraying. This work has of late been crowned with such a measure of success that grape growers and orchardists have widely adopted spraying for the preservation of their fruit.

The testing of all varieties of fruits—small and large—for hardiness, prolificness and general suitability, as well as experiments in vegetable growing, in ascertaining the vitality of seeds, in propagating new varieties of fruits and shrubs, in the growth of forest trees and in the matter of tree protection for orchard and general farm crops; all these receive attention and are being carefully and systematically worked out.

We are all aware of the ravages made annually by insects. There are insects injurious and insects beneficial to agriculture. The farmers are instructed how to distinguish between these two classes. They are further told what remedies to apply to rid their crops of insect pests, and how to apply them. The destruction to fruit, to garden and field crops by insect foes can only be estimated by thousands of dollars yearly. The parasites that affect farm animals do an amount of harm by reducing strength, flesh and the quantity and quality of milk, that can scarcely be calculated. Methods for the prevention and extermination of these pests are the study of the entomologist.

And what am I to say regarding my own department—that of chemistry?

Chemistry is the science that lies at the foundation of all agriculture. It studies the composition of all matter; it ascertains the requirements of plants and animals; it shows the intimate relation that exists between soil and plant-food and the production of milk, flesh and wool; it tells how and why our soils lose their virgin fertility; it explains how plant-food in the soil may be converted into assimilable forms, how cattle foods differ in nutritive qualities, how manures and fertilizers supply nourishment for plants, assigns their relative value and tells how they should be preserved and used; it makes clear why milk should be tested and valued for butter and cheese-making.

By the aid of chemistry we analyze well waters, finding out which are good and which are bad; we learn the value of absorbents in and about our farm buildings, both from an economic as well as an hygienic standpoint; we know the best time to cut grass and corn fodder; we detect fraud and adulteration in fertilizers and dairy products.

Thus in a thousand ways chemistry supplies the why and wherefore of our farming operations and allows us to conduct farm work in a rational, economic and profitable way.

At Ottawa we have splendidly equipped chemical laboratories for studying these problems, and the reports and bulletins of the last eight years will convince you that true and lasting benefits—general and special—have been conferred upon Canadian agriculturists by the efforts of the department of which I am now speaking.

I must not forget to mention the poultry department. The poultry and egg industry is one that is now attracting general attention. The merits of the different breeds for table use and egg production are being ascertained and experiments in breeding are being pushed forward to meet the demands for this branch of agricultural knowledge.

The results of all this work at Ottawa and at the other farms are published in bulletins and in the annual reports. This literature may be had for the asking. No intelligent and progressive farmer can afford to ignore this source of knowledge. Get the reports, read them and then endeavor to put into practice the suggestions therein contained for better, more systematic farming.

The experimental farms are now bureaus of information. Farmers may send enquiries, postage free, regarding soils, fertilizers, farm products, fruit trees, cattle, insect pests, fungous diseases, cattle foods, indeed on any question relating to agriculture, and they will receive answers at the very earliest possible date. By the recent increase in this class of correspondence it is very evident that our farmers, dairymen and fruit growers throughout the country are fast learning to avail themselves of the valuable assistance thus offered them.

Further, you are asked to visit the experimental farms. We invite inspection of the work in the hope that much good will result from the actual observing of the improved methods there in vogue. I may assure you of a welcome, whether you present yourself in person or by letter. We wish to assist you in any way possible; we wish to help you to make your work more profitable and more interesting.

IN MEMORIAM: SIR JOHN S. D. THOMPSON.

Moved by D. DERBYSHIRE, seconded by Mayor COWAN, That this Association in convention assembled, recognizes the great loss sustained by Canada in the death of the late Prime Minister, Sir John S. D. Thompson, whose obsequies are to-day being conducted in state at Halifax; and we hereby place on record our sympathy with his wife and relatives in the deep sorrow occasioned by his sudden and lamented demise. Carried.

CARE OF THE DAIRY COW.

Mr. John GOULD, of Aurora Station, Ohio, delivered a most interesting and practical address upon the all year round care of a dairy cow, a full report of which will be found in the proceedings of the Western Dairymen's Association held at Stratford, where the address was repeated.

THE COMPOSITION OF DAIRY PRODUCTS.

Mr. SHUTT, Chief Chemist, Central Experimental Farm, followed. He said: In order that we, as dairymen, may have a better understanding of our business, and in order that we may be able to apply our skill with intelligence and true economy, it is necessary, nowadays, to know something of the composition of the materials with which we have to do, and further to be well advised as to the rôle that the component parts play in the manufactured products.

For these reasons, I purpose directing my remarks briefly this morning to a consideration, from an economical standpoint, of the composition of cows' milk and its various dairy products and bye-products.

The constituents found in milk are: Water, albuminoids, fat, sugar and ash. For convenience of reference the percentages (averages) of these in milk, cheese, whey, butter, buttermilk and skim milk, have been arranged in the following tabular form:

PERCENTAGE COMPOSITION OF DAIRY PRODUCTS.

Constituent.	Milk.	Cheese.	Whey.	Butter.	Buttermilk.	Skim milk.
Water	87.5	30.0	93.1	15.0	90.4	90.3
Albuminoids	3.2	28.0	.9	.5	3.2	3.6
Fat	3.8	34.5	.4	82.4	.2	.2
Milk-Sugar	4.8	2.0	5.0	....	5.5	5.1
Ash	.7	.7*	.6	.1*	.7	.8

* The differences that occur in the case of cheese and butter between the total amounts of the constituents and 100, correspond to the percentages of common salt added in the process of manufacture.

We may consider the composition of milk somewhat in detail, and then pass on to more rapidly trace the history and function of its chief constituents in the dairy and cheese factory.

Water. To the water in milk, no commercial value can be assigned; from its association with the fat, milk sugar, casein or curd, and mineral matter, however, it has acquired in milk an important physiological value. It is the water normally present in the milk that makes this "food and drink" such an agreeable article of diet. By virtue of its water, milk is an emulsion, in which the fat is in suspension and the other solids in solution. The water in milk not only serves to present these nutritious substances in a palatable form, but acts as the chief factor in contributing towards their easy digestion and assimilation.

But I would emphasize more particularly its rôle from an hygienic standpoint. Water is the universal medium or vehicle for conveying food and discharging the physiological functions of digestion, secretion and excretion in the animal economy. The water of milk is derived from that of the blood, and this in turn from that drunk by the animal. How important, how necessary then, is it, not only for the health of the cow but also for the wholesomeness of the milk and its dairy products, that the water supplied to cows should be pure and free from pollution !

The question of pure water is one of greater moment to dairymen than to any other class of farmers, since the germs of the diseases that may lurk in a contaminated supply, may be handed on through the agency of the cow to many an innocent victim.

Organic filth of all kinds must be carefully excluded from entrance into the well. No well should be sunk in a barnyard or stable, as sooner or later it must in such a place act as a cesspool.

Pure water in a large measure means the good health of man and beast on the farm ; it means thrift in the animals and wholesomeness in their products.

Albuminoids. These may be considered under two classes: casein or curd and albumen. The first is separated from its solution in milk by the action of rennet and acid ; the latter constitutes the non-coaguable portion of the albuminoids (or nitrogen-containing substances) and consequently remains in solution when milk is curdled. It is extremely probable that the albumen of milk is complex in its character and really consists of several closely allied compounds. This seems the more evident since a separation can be further effected by certain chemical and physical means. The usual amount of casein is about 2.5 per cent.; that of the albumen about .7 per cent.

The feeding value of curd is high. In composition it is akin to the lean (muscle) of meat, the white of egg and the gluten of wheat. All animals require daily a certain amount of such nitrogenous organic materials to repair the waste of their tissues and to enable them to do work, to make flesh and milk. Plants also require nitrogen to store up in their tissues ; the compounds so formed afterwards serving as nutriment for animals. The nitrogen-holding substances moreover are costly. Their rational and scientific use, both as plant and animal food, requires therefore careful consideration.

Fat. The butter-fat constitutes the element of the greatest commercial value in milk. It is the most important of all the solid constituents.

Chemically, it is the result of the combination of glycerine with certain fatty (organic) acids—principally butyric, stearic, palmitic and oleic acids. It is butyric acid, (present in butter to the extent of some 6 per cent.) an acid characterized by being soluble in water and volatile, that is the distinguishing feature of butter-fat. Oleomargarine and other productions of foreign oils and fats—now upon the markets of other countries as butter substitutes—may be recognized by the chemist, owing to the absence or very low percentage of volatile fatty acids found in them. They contain but little or no butyric acid.

The fat of milk exists as small globules, held in suspension ; hence, as already stated, milk is an emulsion. The size of the globules differs in the milk of the various breeds. Being lighter than the serum (the solution of the other milk solids), the fat rises to the surface, on allowing the milk to stand. For the same reason the fat may be taken immediately, and almost absolutely, from milk by aid of centrifugal force in the separator. This apparatus is by far the most economical and thorough of all devices for removing fat.

It is not my purpose to-day to speak to you at length upon the Babcock method, either as a reliable process for estimating the fat in milk or as a means of basis for the valuation of milk. I have done that on previous occasions, fully explaining the whole matter to the members of this Association. All I wish to do now is to draw your attention to the following table, prepared by Dr. S. M. Babcock, embodying the results of experiments by Dr. Van Slyke, of the Experimental Station of Geneva, N.Y., and showing the relation of fat to casein, and yield of cheese in normal milks containing different amounts of fat. The data it contains are from the very highest authorities and are well worth the careful consideration of all interested in cheese-making.

Per cent. of fat in milk.	Average per cent. of fat.	Average per cent. of casein.	Lb. of casein per lb. of fat.	Fat lost from 100 lb. of milk.	Per cent. of fat in milk lost in whey.	Lb. of cheese from 100 lb. of milk	Green cheese for lb. of fat in milk.
From 3.0 to 3.5	3.35	2.20	.66	.32	9.55	9.14	2.73
3.5 " 4.0	3.72	2.46	.66	.33	8.33	10.04	2.70
4.0 " 4.5	4.15	2.70	.65	.32	7.70	11.34	2.73
4.5 " 5.0	4.74	3.05	.64	.28	5.90	12.85	2.71
5.0 " 5.25...	5.13	3.12	.61	.31	6.00	13.62	2.66

The results of the large number of experiments conducted by Dr. Van Slyke, and here epitomized by Dr. Babcock, establishes the fact that the percentage of fat of milk is a true indication of the value of normal milk for cheese-making purposes. We have no hesitation in saying that when quantity and quality of cheese are taken into consideration, the payment for milk in cheese factories on the basis of the percentage of fat, is the very best and most equitable plan that has been proposed.

Sugar. Is not as soluble and not as sweet as cane-sugar, though similar in its composition. It undergoes fermentation, forming first lactic acid (which curdles milk) and finally alcohol. The decomposition of milk-sugar into lactic acid is brought about by a micro-organism or bacterium—always to be found in milk that has not been sterilized.

The alcoholic fermentation of milk-sugar allows the manufacture of Koumiss and many other alcolic beverages from milk.

Milk sugar has a distinct and important feeding value. It belongs to the class of compounds known as carbohydrates, whose function it is in the animal economy to furnish bodily heat and energy.

Ash or Mineral Matter. This consists of phosphates, chlorides and sulphates of lime, potash, magnesia, soda and iron. The total ash amounts to about .7 per cent. of the milk, and is estimated by burning off the fat, curd and milk sugar, left on evaporating the milk.

When we consider milk as an article of food, we must recognize the very important rôle of this soluble mineral matter. It supplies in the best proportions and in the most assimilable condition, those earthy salts necessary to the development of bone and other tissues of the body.

Cheese differ much in composition, owing to the various methods in vogue for their preparation. The analysis here given probably represents the average Canadian full-cream cheese.

Cheese is both a rich and a strong food, and has an exceedingly high nutritive value.

In the manufacture of cheese, the curd is precipitated from milk by rennet. This casein or curd carries with it by far the greater part of the fat, in addition to a small quantity of milk sugar and ash. The various steps in the making and ripening of the cheese and the changes that accompany them, I cannot now speak of; such an important matter as cheese-making deserves more attention than is possible to give it in this address.

Whey is the bye-product in the manufacture of cheese. It contains the soluble albumen, the mineral matter, the milk-sugar of the milk, together with about half of one per cent. of butter-fat. Its chief constitutent is the milk-sugar, and it is upon this that its *principal* value as a food for hogs depends.

Butter should not contain more than 17 per cent. to 18 per cent. of matters other than butter-fat—this latter constituent is usually found to average from 80 per cent. to 85 per cent. in good samples. The better made the butter, the less will be the amount of curd present. Water, incorporated during the process of the manufacture, and small quantities of ash and milk sugar constitute (in addition to the salt used), with the curd already mentioned, the substances other than butter-fat, present in butter. Of the nature of butter-fat we have already spoken.

Buttermilk contains practically all the constitutents of milk with the exception of the butter-fat. If the churning has been properly conducted the amount of fat in buttermilk should not exceed .2 per cent. It, however, should be mentioned that more or less of the milk-sugar has been converted into lactic acid.

The feeding value of buttermilk is much greater than that of whey—owing chiefly to the presence of the casein.

Skim milk varies in quality according to the method employed in removing the butter-fat. By the use of the separator, not more than .2 per cent. of fat is left in the skim milk. With other processes of skimming the percentage is much greater.

The chief difference between buttermilk and skim milk from the separator is that the latter is sweet, containing no lactic acid.

Skim milk is a valuable food, supplying to farm stock the heat and muscle-forming compounds necessary for their maintenance and growth. Its use must, however, be supplemented by some food containing oil or fat, such as linseed or corn-meal.

The meeting then adjourned until the afternoon.

SECOND DAY—AFTERNOON SESSION.

There was a splendid turnout of dairymen when the President took the chair at two o'clock. Prof. Dean, of the Ontario Agricultural College, was the first speaker. He had copies of some tabulated matter distributed through the audience, and referred to the figures many times during his address.

PAYING AT CHEESE FACTORIES BY THE BABCOCK TEST.

Prof. Dean began by saying that as no subject had been named by those inviting him to speak at the Convention, he had chosen his own, and would give the results of some experiments which had been conducted under his direction in reference to cheese-making. He then proceeded: The results of these experiments have enabled me, I believe, to more correctly answer the question: What is the best mode of paying for milk at cheese factories? As to whether I can answer that question satisfactorily or not I will leave you to judge for yourselves after I have made my statement of the case.

Before we can come to the practical solution of that question we must have some data upon which to find an answer. Mr. Shutt in his address this morning gave you the composition of milk, and that will prepare the way for what I am about to say in reference to the relation between milk and cheese. The object of the factoryman is to make the milk up into the best cheese possible. If the cheese-maker understands his business he will make good cheese, providing the milk is in good condition; but if the milk is bad, or lacking in any of its more essential properties he cannot make a good article, or can only do so with great difficulty. If it were practicable it would be better to make the cheese from the milk of each patron separately. If each man's milk could be got into a cheese—if there were no mingling of patrons' milk—it would be easy to regulate the cheese-making business. But in factory work we have to make cheese from milk which has been contributed by 50, 60, or perhaps 100 patrons, and you will readily see the difficulty of dividing the proceeds fairly where there will be a more or less variation in the quality of the milk sent in by these patrons.

Milk and Cheese. Milk is composed chiefly of six substances: butter-fat, casein albumen, sugar, ash and water. Milk contains about 87.6 per cent. of water, while cheese has about 34.6 per cent. and whey about 93.4 per cent. The average milk contains about 3.5 per cent. of fat, and cheese about 35.5 per cent. The casein or curd is in milk to the extent of about 2.3 per cent., and comprises about 22.1 per cent of cheese. The albumen resembles casein in its composition, but cannot be made insoluble by the action of rennet, and very little of it is found in cheese. In fact nearly all of the albumen goes into the whey, while the casein and butter-fat go largely into the cheese. The water in milk has very little value in one sense, yet along with the other ingredients composing cheese it has a considerable value. However, the two really valuable substances in milk for cheese-making are the casein and the butter-fat, and with these I wish to deal more particularly this afternoon. Now, if milk were always in the same condition when received at the factory, and the cheese always had the same amount of moisture left in it, and the same amount of salt, and was manufactured under the same conditions every day, we ought to have the same quantity of cheese from milk testing the same in fat. But we cannot control these conditions, and so cannot get the same results from every 100 pounds of milk. The quantity of butter-fat in 100 pounds of milk varies considerably at the factories, ranging from 3 to 5.25 per cent. In our own experiments we have found it to run from 2.9 to 4.5 per cent. We are able by means of the Babcock test to correctly determine the amount of butter-fat in the milk sent to a factory. Until Dr. Babcock invented his milk test the only persons able to determine butter-fat accurately were the chemists in their laboratories; now any intelligent man can do so, and at but little cost. Now, if we can tell the per cent. of fat and the per cent. of casein in milk, we ought to be able to determine the value of that milk for cheese-making—excepting, of course, the condition of the milk and the condition of the maker. But it takes a chemist to tell the per cent. of casein in milk. Science has not yet given us a cheap, rapid and correct process of determining the amount of casein in milk. But while it is known that butter-fat varies from 2.5 to 4.5 or 5 per cent., it is thought by many authorities that the per cent. of casein remains about the same. Dr. Blyth says that the per cent. of casein in milk remains almost constant. Dr. Van Slyke, however, believes that in all cases the per cent. of casein increases with the fat. So you will see that there is some difference of opinion. If the casein remains constant in milk, we can easily determine the value of the milk for cheese purposes—we would simply read the per cent. of fat plus the casein. Prof. Shuttleworth has made some chemical experiments at the Agricultural College at Guelph, and his analysis of the component parts of cheese are as I have given earlier in this address.

Methods of Dividing Proceeds at a Cheese Factory. Now we come to the systems which have been tried for dividing the proceeds of cheese factories. We first of all had the plan of paying patrons according to the quantity of milk delivered. Any one who has studied the question carefully must come to the conclusion that this plan was not correct. Everyone admits that the yield of cheese is not in proportion to the quantity of milk delivered, and that being the case, the system could not be a just and satisfactory one. The next system we had came from our American neighbors and is known as the Babcock test. From the results of our own experiments I have come to the conclusion that paying according to the fat alone is not absolutely correct. I admit that it is better than the old way. But we must not rest content if we know there is a still fuller and more accurate mode. (Every factory should have a Babcock tester, and every cheese-maker should know how to work it.) But there is a third and a better way, which utilizes the Babcock tester. I think we have worked out a system which is an improvement on the others. The first system of paying by weight alone was not accurate—in fact Mr. Eager says that it is positively dishonest. The second system assumes that the milk is valuable in direct proportion to the fat contained in it; and if this is not true, paying by the fat alone is not just. Now it happens that the yield of cheese is not in proportion to the fat contained in the milk. Somehow or other patrons of cheese factories have had a feeling that the fat alone was not that which made the cheese. I would like to make four statements bearing on this question:

First, the object of experiment stations is to find out the truth. In this case the truth sought to be obtained was in reference to the question, what is the effect of an increased percentage of fat in normal milk on the yield and quality of cheese ?

Second, in experimental work we should use such quantities of milk that effects other than we are looking for shall be excluded as far as possible.

Third, having arrived at correct principles, the data employed should be correct. If you are not willing to be guided by the results of experiments it is useless to say anything further ; but if we can point out to you that the data is reliable, and sufficient of it, I feel certain that you will be willing to be guided by the results obtained in this way. (Let me say that if I were the manager of a joint stock company I would not force patrons to adopt the test against their will. But having laid before them the facts, I would let the matter remain with them.)

Fourth, the system that takes note of both fat and casein is the one most nearly correct.

I hope that you will give any statements I may make, thorough discussion. In connection with certain experiments conducted at Guelph during the past year, I sent out about one hundred circulars requesting co-operation by leading cheese-makers, but we received only a few responses. We have tabulated the result of these experiments, and present them in the following tables. [Printed copies of these tables were distributed through the hall so that the audience could keep in touch with the speaker] :

1892. Experimenter.	Per cent. fat in milk.	Lb. milk	Lb. fat.	Lb. cured cheese.	Lb. milk for one lb. cheese.	Lb. cheese for one lb. fat in milk.
Tavistock Dairy School, October	4.50	500	22.50	56.73	8.81	2.52
	3.20	500	16.00	45.12	11.05	2.82
	4.30	500	21.50	54.90	9.10	2.55
	3.30	500	16.50	46.19	10.82	2.79
	4.10	500	20.50	52.75	9.47	2.57
	3.60	500	18.00	48.37	10 33	2.68
	4.00	500	20.00	52.62	9.50	2.63
	3.80	500	19.00	51.00	9.80	2 68
Averages and totals....................	4.23	2,000	84.50	217.00	9.22	2.57
	3.48	2,000	69.50	190.68	10.50	2.74
Difference...........	0.75	.. ..	15.00	26.32	1.28	0.17
Perth Dairy Station, June, July and August..........................	3.9	9,277	361.80	935.00	9.92	2.58
	3.2	9,733	311.45	881.75	11.03	2.83
	3.8	8,025	304.95	783.25	10.24	2.56
	3.3	7,700	254.10	706.75	10.89	2.78
	3.7	5,400	199.80	515.25	10.48	2.57
	3.4	16,835	572.19	1,554.50	10.82	2.71
	3.6	12,900	463.12	1.220.50	10.57	3.63
	3.5	11,200	392 00	1,049.25	10.67	2.67

Regarding the amount of casein in milk we found it ranging from 2 to 2.4 per cent. We also found that the higher the per cent. of fat in the milk the lower the yield of cheese per pound of fat. This was also the case with the Perth dairy experiments and all the others quoted.

1894. Name of experimenter.	Month	Average per cent. fat in milk.	Lb. milk.	Lb. Fat.	Lb. cheese.		Lb. milk for lb. cheese.		Lb. cheese for lb. fat.		Average per cent. fat in whey.
					Green.	Cured.	Green.	Cured.	Green.	Cured.	
O. A. C., Dairy Department, Guelph..	May ...	3.80 3.48	2,100 2,100	79.80 73.08	206.50 194.75	194.75 183.25	10.03 10.78	10.77 11.46	2.59 2.68	2.44 2.51	0.26 0.25
	June ..	4.18 3.60	1,800 1,800	75.24 64.80	195.50 181.25	183.75 170.00	9.21 9.95	9.79 10.59	2.60 2.80	2.44 2.62	0.19 0.19
	July ...	3.84 3.23	1,800 1,800	69.15 58.05	184.00 164.25	172.25 154.50	9.79 10.97	10 46 11.66	2.67 2.83	2.49 2.67	0.28 0.27
	August.	3.93 3.25	1,800 1,800	70.80 59.50	178.50 161.50	169.00 152.25	10.10 10.15	10.68 11.83	2.53 2.76	2.39 2.56	0.26 0.20
	Sept ...	3.97 3.03	1,800 1,800	71.40 54.60	188.25 161.25	179.75 152.75	9.56 11.16	10.01 11.80	2.63 2.95	2.52 2.79	0.09 0.15
	Oct	3.95 3.56	1,500 1,500	59.25 53.40	161.75 150.75	153.50 142.50	9.27 9.95	9.77 10.52	2.81 2.82	2.59 2.68	0.14 0.14
	Nov....	3.88 3.47	1,800 1,800	69.90 62.40	190.00 175.75	183.25 168.25	9.47 10.24	9.82 10.69	2.72 2.82	2.62 2.70	0.14 0.11
	Av'ge and totals.	3.94 3.37	12,600 12,600	495.54 425.83	1,304.50 1,189.50	1,236.25 1,123.50	9.63 10.60	10.19 11.22	2.65 2.81	2.50 2.65	0.19 0.18
	Diff ...	0.57	......	69.71	115.00	112.75	0.97	1.03	0.16	0.15	0.01
A. T. Bell, Tavistock.	Oct. 19 .	4.70 3.45	500 500	23.50 17.25	59.25 48.50	57.00 46.50	8.44 10.31	8.77 10.75	2.52 2.81	2.42 2.69	0.30 0.20
J. B. Muir, Avonbank	Oct. 29 .	4.00 3.70	5,338 5,116	213 52 189.29	584.00 519.00	568.00 507.00	9.14 9.85	9.40 10.09	2 73 2.74	2.66 2.67	0.20 0.20
L. L. Phelps, Mt. Elgin	May 24.	3.40 3.00	4,500 4,500	153.00 135.00	481.50 434.00	470 50 424.00	9.34 10.36	9.91 10.61	3.14 3.21	3.07 3.14	....
E. A. Roode, Hulbert, Dundas Co	July 23, 24.	3.80 3.20	750 750	28.50 24.00	75.00 70.00	72.00 66.00	10.00 10.71	10.41 11.34	2.63 2.92	2.52 2.75	0.20 0.20
	Aug. 1, 2.	3.80 3.60	750 750	28.50 27.00	75.00 72.50	72.00 70.00	10.00 10.34	10.41 10.71	2.63 2.68	2.52 2.59	0.30 0.30
	Sept. 6, 7.	3.80 3.20	300 300	11.40 9.60	31.00 28.00	30.00 27 00	9.68 10.71	10.00 11.11	2.72 2.91	2.63 2.81	0.30 0.40
	Oct 9, 10.	4.30 3.80	500 500	21.50 19.00	62.00 56.00	60.00 53.50	8.06 8.93	8.33 9.35	2.88 2.95	2.79 2.81	0.30 0.30
Av. of Mr. Roode's experiments	Four months.	3.92 3.45	2,300 2,300	89.90 79.60	243.00 226.50	234.00 216.50	9.43 10.17	9.79 1.63	2.72 2.87	2.62 2.74	0.28 0.30
	Diff....	0.47	......	10.30	16.50	17.50	0.74	0.84	0.15	0.12	0.02
*Wm. Dwyer, Chesterville, at the Gowan Brae Factory	Sept. 10, 11.	4.50 2.80	1,350 1,350	60.75 37.80	1.50 1.30	1.47 1.26	....	9.32 10.71	....	2.42 3.33	0.40 0.20

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*In this experiment cream was added to get the richer milk and the partially skimmed milk used to secure the lower per cent. fat.

Table showing the amounts of money patrons would receive according to different methods of pooling, assuming that one patron furnished the high and the other the lower per cent. milk.

1894. Name of experimenter.	Month.	Average per cent. fat in milk	Lb. of cured cheese.	Amounts of money each should receive if paid according to: (Cheese @ 10c. per lb.)				
				Weight of milk.	Per cent. of fat.	Per cent. of fat+1	Per cent. of fat+2	Weight of cheese.
				$ c.	$ c.	$ c.	$ c.	$ c.
O. A. C., Dairy Department, Guelph....................	May .	3.80	194.75	18 90	19 73	19 54	19 44	19 47
		3.48	183.25	18 90	18 06	18 25	18 37	18 32
	June .	4.18	183.75	17 68	19 01	18 73	18 56	18 37
		3.60	170.00	17 68	16 36	16 64	16 81	17 00
	July .	3.84	172.25	16 33	17 74	17 43	17 24	17 22
		3.23	154 50	16 33	14 92	15 23	15 43	15 45
	Aug..	3.93	169.00	16 06	17 58	17 25	17 04	16 90
		3.25	152.25	16 06	14 54	14 87	15 08	15 22
	Sept..	3.97	179.75	16 62	18 86	18 36	17 87	17 97
		3.03	152.75	16 62	14 39	14 89	15 38	15 27
	Oct ..	3.95	153.50	14 80	15 57	15 41	15 30	15 35
		3.56	142.50	14 80	14 03	14 19	14 30	14 25
	Nov..	3.88	183.25	17 57	18 57	18 34	18 21	18 32
		3.47	168.25	17 57	16 57	16 80	16 94	16 82
Average and totals	......	3.94	1,236.25	117 96	127 06	125 00	123 66	123 60
		3.37	1,123.50	117 96	108 87	110 87	112 31	112 33
Difference	....	0.57	112.75	....	18 19	14 19	11 35	11 27
A. T. Bell, Tavistock	Oct	4.70	57.00	5 17	5 97	....	5 71	5 70
		3.45	46.50	5 17	4 38	....	4 64	4 65
	Diff....	1.25	10.50	....	1 59	....	1 07	1 05
J. B. Muir, Avonbank...........	Oct	4.00	568.0	54 98	56 98	....	56 27	56 80
		3.70	507.0	52 69	50 52	....	51 23	50 70
	Diff ...	.30	61 0	2 29	6 46	....	5 04	6 10
L. L. Phelps, Mount Elgin	May ...	3.40	470.50	44 725	47 52	....	46 44	47 05
		3.00	424.00	44 725	41 93	....	43 00	42 40
	Diff ...	0.40	46.50	....	5 59	....	3 44	4 65
E. A. Roode, Hulbert.......	Av. 4 mos.	3.92	234.00	22 025	23 37	....	22 93	23 40
		3.45	216.50	22 025	20 69	....	21 11	21 65
	Diff ...	0.47	17.50	....	2 68	......	1 82	1 75

Mr. R. M. Ballantyne, of Stratford, at a meeting of the Western Dairymen's Association suggested that 1 per cent. be added to the reading of the fat. Now, I do not know what put this matter into his head, but the addition of that 1 per cent. is more nearly correct than paying by the fat alone. We have found that adding 2 per cent. to the actual readings is more accurate still. You can see this by comparing the last three columns of the table.

The casein in milk ranges from 2 to 2.4 per cent. I believe that fat plus the casein represents the value of milk for cheese-making. The results arrived at by Prof. Shuttleworth and myself have been worked out independently—he proceeding along the lines of the chemist, and we working from the standpoint of practical dairymen. Secretaries of factories would find 2.274 per cent. an awkward figure, but by adding 2 per cent. you will be near enough. I would like you to help us to solve this problem of how to get the just amount of money for the milk furnished cheese factories.

Table showing amount of money each patron should receive according to different methods of pooling, assuming that the different qualities of milk were supplied by different patrons.

1892. Experimenter.	Per cent. fat in milk.	Lb. cured cheese.	Amounts of money patrons would receive if paid according to: (Cheese @ 10c. per lb.)			
			Weight of	Per cent. of fat.	Per cent. of fat + 2.	Weight of cheese.
			$ c.	$ c.	$ c.	$ c.
Tavistock Dairy School ..	4.50	56.73	5 09	5 96	5 66	5 67
	4.30	54.90	5 09	5 69	5 49	5 49
	4.10	52.75	5 09	5 43	5 31	5 27
	4.00	52.62	5 09	5 29	5 23	5 26
	3.80	51.00	5 09	5 03	5 05	5 10
	3.60	48.37	5 09	4 76	4 88	4 84
	3.30	46.19	5 09	4 36	4 61	4 62
	3.20	45.12	5 09	4 24	4 53	4 51
1892.						
Perth Dairy Station	3.90	935.00	87 48	96 74	93 40	93 50
	3.80	783.25	75 68	80 54	79 42	78 32
	3.70	515.25	50 92	53 43	52 52	51 52
	3.60	1,220.50	121 65	123 83	123 05	122 05
	3.50	1,049.25	105 62	104 82	105 11	104 92
	3.40	1,554.50	158 75	153 00	155 09	155 45
	3.30	706.75	72 61	67 94	69 64	70 67
	3.20	881.75	91 78	83 28	86 36	88 17

CONCLUSIONS.

1. An increased percentage of fat in the milk gives an increased yield of cheese, though not in the same proportion.

2. That a pound of butter-fat in milk averaging 3.37 per cent. of fat, will make more cheese than a pound of fat in milk averaging 3.94 per cent. of fat is shown by the results of the experiments at the Dairy of the Ontario Agricultural College, and all the other Canadian experiments quoted point in the same direction.

3. There is little difference in the per cent. of fat lost in whey whether the milk is rich or poor in fat, what difference there is being in favor of the whey from the poor milk.

4. Adding on two per cent. (or some number which fairly represents the per cent. of casein in milk) to the fat readings and dividing the proceeds among the patrons according to this basis appears to be more nearly correct for *normal milk*, than paying by weight of milk or paying according to the percentage of fat alone Though this number is tentative or suggestive rather than conclusive, we expect that something more nearly correct will be discovered in the near future.

I wish to emphasize the fact that in all our experiments we found that the poorer milk made more cheese per pound of fat contained in it than in the case of richer milk. The fact stated in paragraph 2 of the "conclusions" appears to hold good not only in the experiments at the Agricultural College, but also in those conducted by the other experimenters.

Mr. MACPHERSON: The amount of fat in the whey may be affected by the conditions attending the manufacturing of the cheese. It is hardly possible to have two batches of milk in exactly the same condition. It is possible that in Mr. Roode's case the difference may have been in the manufacturing. He may have had gassy curd.

Prof DEAN: Exactly.

Major REDMOND: One objection I have to the experiments is, there was not a normal condition of milk. In June it was 4.18 and in September it was 3.97. Usually the milk is richer in September.

Prof. DEAN: That is because we get from other herds besides our own. We have found in our own herd that the per cent. of fat is about as high in June as in any other month.

Major REDMOND: That is different to my experience, and to that of most herds. These figures may be misleading.

Prof. DEAN: The average herds of the province are drying up in September, but in our case our cows come in at all times during the year. You will see that the amount of fat depends upon the period of lactation.

Mr. EAGER: The reason I would ask Prof. Dean to add no per cent. is this? When the Professor sent out his bulletin in August it came like a thunderbolt from a clear sky. I was paying for milk according to quality on the lines of the simple Babcock test in 23 factories. I started with 25, but 2 soon kicked over the principle. The bulletin had hardly reached its destination when one of my patrons came to me and said, "Look here! You have been telling us that the Babcock test is correct, and here this Guelph Professor of Dairying says it is not honest." I then pointed out that you had suggested adding two per cent. to the readings of fat to bring it closer. I continued to use the Babcock test, and I may say here that I believe there should be a law passed compelling every factory to pay according to quality, for the old system of pooling milk is dishonest. Now, is there any consistency in telling our patrons to send their milk as it comes from the cow, and then not pay for milk according to quality after all? We have found that in the factories under our control which have adopted the Babcock test there is a marked improvement in the quality of the milk and of the cheese. It takes less milk now to make a pound of cheese, and we have had no fines. Under the old pooling system we had to fight our battles in the courts, but now we are free from that disagreeable duty. Most of our farmers now have their cans protected from the rain. I have for twenty years advocated the covering of milk cans, but I never succeeded until we introduced the system of paying according to butter-fat. (Applause.) There is absolutely nothing in the pooling system to recommend it There is no other article produced by the farmer that he will sell by bulk and not according to quality, except milk. I am now ready to go on according to the suggestion of Prof. Dean and add two per cent. to the reading of fat if it is found to be the best; but I do not want to go back to the old dishonest pooling system. Paying according to quality is an up grade movement, and is a protection to the honest and progressive dairyman.

Prof. DEAN: One object of publishing the bulletin was to get the co-operation of cheese factories, so as to have their experience also to add to our own. The Tavistock factory has added one per cent. to the reading of fat commencing with the month of July last.

Major REDMOND: Will we have to give up the present breed of cow? What is the best breed of cow under existing circumstances?

Prof. DEAN: You can no more pick out the best cow for every man than you can select a wife for him. I may say, however, that it is generally pretty safe to get a good grade cow, and breed her to a full bred bull of a good milking breed and strain. Test your herd for quality as well as quantity, and weed out all animals which do not come to a standard of 6,000 pounds of milk or 250 pounds of butter.

Mr. GALLAGHER: Is it not a fact that the richer the milk the poorer the weight? Take, say, 100 quarts of milk, will not the milk having the most fat be the lightest in weight?

Prof. DEAN: It would be a trifle lighter, but scarcely perceptible on the scales ordinarily used at factories.

ADDRESS OF WELCOME TO HON. JOHN DRYDEN.

The following address, which was handsomely engrossed, was read by Mr. W. F. Latimer, on behalf of the Gananoque Board of Trade.

To the Hon. John Dryden, Minister of Agriculture.

The Board of Trade extends to you a hearty welcome on this occasion of your first official visit to Gananoque. Our town, while itself a home of manufacture, is the centre of a district famous for its farm produce, not less than for the panorama of native beauty which affords delight to the seekers of summer-rest. Most suitable, then, is it that a town combining the beauties of nature with the activities of industrial life should be the meeting place of those whose livelihood depends so largely both on natural resources and on skilful process. Though we cannot claim the golden glory of the western wheat field, nor rival the fruitful valley of the Annapolis, yet with our dairies we stand in the markets of the world, proud of the cheese which is our contribution to the life and comfort of the race.

Equally appropriate is it that we should here greet one who represents the best material for a young nation, a typical product of a democratic civilization—industry crowned with success, and success made honorable and useful by Ministerial service. However we may differ in opinion on the difficult political and economic problems of our national life, all agree in wishing success to agriculture, which lies at the basis of our country's prosperity. It is therefore satisfactory to find your department entrusted to hands trained by industry and a mind equipped by mature experience.

As a Board of Trade we shake hands with the farmer. Too often the interests of the factory are set forth in opposition to those of the field. But we recognize a higher interest embracing both—the welfare of our country. Those engaged in any kind of production find their true allies in those devoted to distribution, and those who bring the iron from the ground or transform it into implements are closely related to those who through agricultural or pastoral life make the earth yield her food supplies to her workers. We hope that the platform of the future will not set classes at variance. Rather would we look to the leaders of opinion to teach men in all departments of life to realize their unity of interest in the nation, and their natural brotherhood in the commonwealth of work where all have equality of service and freedom of command.

E. L. Atkinson,
President.

J. T. Green,
Secretary.

Gananoque, Jan. 3, 1895.

Upon the conclusion of the hearty applause which greeted the reading of the address, the Minister of Agriculture said: I am afraid I cannot properly express in language my feelings of gratitude upon receiving this address from the Board of Trade. I have been taken by surprise, indeed, not knowing until I entered the hall, that such a matter was in contemplation. I can assure you, that I appreciate the expressions contained in the address and the spirit which prompts them. We in the west know of this town largely on account of the manufacturing establishments you have located here. I also notice what the address says in reference to the surrounding country. I am glad to hear you speak so well of the section of the province you live in. These are no new phrases to me, for you will understand that I am travelling around the country a good deal, and wherever I go I find that the people believe that theirs is the particular spot deserving of the name of the garden plot of Ontario. The only conclusion I have drawn from this is that the whole province must be a garden spot. (Applause and laughter.) I am pleased to note in the address the expression that agriculture lies at the basis of the country's prosperity. I believe that thoroughly. Farmers help to make the nation great in more ways than one. If you will go with me to Toronto or Montreal, to New York, Chicago, Philadelphia or other leading cities of the States, I can point out to you men occupying the highest municipal, commercial and professional positions—men who have been born and reared on the farm. But those who remain on the land and work it are none the less worthy of respect, for upon the result of their labors depend in very large measure the success and prosperity of the whole people. That is why the Government encourages the various societies, associations and institutes now in existence for the promotion of various branches of agriculture. That is why the Government aids by a money grant, and by the service of its professors and other officials, such an association as that convened in Gananoque to-day. Most of you living in town have discovered that you cannot have prosperity unless the farmers round about you are prosperous. There is no class in this country more deserving of prosperity than the farmers. It is not an easy thing to toil winter and summer and get the small returns that most farmers have to put up with. I have often admired my brother farmers as I have seen them meet with all kinds of obstacles—crops failing, prices low, and all that—yet coming bravely to the work again, full of heart and hope. I notice in the address that the Board of Trade wishes to "shake hands with the farmer." I would like, on behalf of the farmers of this country, to return the shake of the hand. (Applause.) I occupy perhaps the most prominent position of any farmer in Canada, the position of Minister of Agriculture for this province, and I believe in such a shaking of hands I do not think it necessary that there should be difference of class in this country. It is not right for me to say that because I am a farmer I am opposed to you who are a manufacturer, or to you who may be a doctor or lawyer. (Applause.) I have no sympathy with that doctrine. Everyone who has been at my home, or who knows me well, knows that I am not only a farmer but an enthusiastic farmer. I would not exchange my calling for that of a doctor, a lawyer, a merchant or anybody else. I am proud of the fact that I am a farmer. (Hear, near.) But while I hold that view, and will not allow any man to run down my business, and say I am not much because I have stood between the handles of a plow or run a reaper, I am bold to say that we need all these other callings and professions in order to make up a great country. I am delighted with the sentiment with which your address closes. We farmers, merchants, manufacturers and professional men ought to be united in pushing forward this grand country in which we live. I am afraid that even some of you who listen to me do not realize what a grand country this province of ours is. We live in one of the best countries to be found on the face of God's earth. As the years go by there will be plenty for all of us to do in the developing of its agriculture, its manufactures and its commerce. And so it is well that we should all gather, whether farmers or not, at such a meeting as this, to wish each other well, and to acknowledge the close and indissoluble connection between the interests of the agriculturist and his brethren of the workshop or the counting house. I shall preserve this beautiful address, and cherish it as a memento of a pleasant visit and a most kindly welcome. (Loud applause.)

ADDRESS OF WELCOME TO N. AWREY, M.P.P.

Mr. J. A. WEBSTER, Reeve of Lansdowne, Front Township read the following address of welcome to Mr. N. Awrey, M.P.P., on behalf of the farmers of the surrounding districts :

Nicholas Awrey, Esq., M.P.P.

DEAR SIR,—The farmers and dairymen of Leeds county take the opportunity of your visit on this occasion to express the high respect they entertain for yourself personally and the appreciation of your services in connection with the agricultural and dairy interests of Ontario.

As a member of the Provincial Parliament, as President of the Central Farmers' Institute. and particularly as Ontario's Commissioner to the World's Fair in 1893, you have done good services in directing the farming community towards large productions, improved qualities, greater facilities for marketing, better prices and a leading prominence among the food-producing countries of the world.

We desire especially to acknowledge your valuable agency in connection with the exhibits at Chicago, as we feel that to your wise counsel, in advising as to the production and selection of agricultural products and live stock, your admirable manner of placing those exhibits before the judges and visitors, and your complete and intelligent explanations, is mainly due the numerous prizes received by Ontario, and the high reputation thus achieved

We assure you, sir, that your course in the past has given eminent satisfaction to those whose interests you have studied and advanced, and we still look to you as a leader in new and more extended lines of commercial agriculture, and we trust that before many years we may have the pleasure of congratulating you upon promotion to such a position as will be a fit recognition of your high ability and reward for your valuable services.

Mr. AWREY was also warmly greeted as he rose to reply. He said : It is the second time that I have been to Gananoque. Upon the occasion of my first visit it was summer, and the charming scenery of the neighborhood could be seen to great advantage. I then received a cordial reception from my fellow farmers, and they also then presented me with an address, the language of which was an incentive to me to do what I could for the agricultural interests of the Province of Ontario. At that time I had just commenced my labors for the Columbian Exposition, and the words of encouragement I received here helped me very much in my work. I realized then for the first time that I had the farmers, dairymen and stock raisers of the province behind me, and with these and the business men co-operating with me as Commissioner I could not but succeed. Leeds was the first county to congratulate me upon my appointment. I am bold to say that the farmers of Ontario need not be ashamed of their exhibit or their record compared with that of any other nation on the face of the earth. The agricultural exhibit of this province was one of the finest, not only in quality and quantity, but also in artistic arrangement of any at Chicago, and that was due not so much to me as to the men throughout the length and breadth of Ontario. Visitors from all over Ontario have placed their opinions upon our register, and all of these opinions have been most favorable to us. And so it has been with people from England, Ireland and Scotland. In fact the consensus of opinion of visitors from all lands was that the Province of Ontario must be a land to be proud of. Mr. Burgess, a prominent American, recorded in the register: "Any country that can produce such grain and stock and such grasses as Ontario can do, must be one of the finest countries in the world to live in." I can say for your satisfaction that when our dairy cattle were shown against competitors having the almost unlimited wealth of the American stockmen behind them—and men who had been making their selections from the greatest herds of the world—the man whose duty it was to call out the awards rode around the ring announcing the prize winners, and after a while he got tired and said: "It's no use of my telling you who are getting the prizes; they all appear to be going to Ontario and Quebec; when we get anything I will let you know." (Laughter and applause.) And what has been said about our grain and our stock can also be said regarding our cheese. The only reason we did not take all the medals for cheese at Chicago was simply because we had not enough cheese. We left one medal to the United States, while we had ten in Ontario and Quebec. I am glad that while the bulk of the farmers of this immediate section may be opposed to me in politics, they can sink party feeling on such an occasion as this and remember that they are Canadians, and that we are all working for one great object, and that is the common good of the province. You may well be proud of Leeds and Grenville. Up around Hamilton, where I live, we have the genuine garden of Canada. (Laughter.) But here you are making more out of agriculture than we are under more favorable conditions of soil and climate. You have gone into dairying and are enriching your soil, improving your farms and building happy homes, as well as making a name for yourselves as progressive agriculturists. Canada is to-day the best and most prosperous part of the British Empire, and you live in one of the most beautiful and romantic spots of that great Dominion. When a few more decades shall pass by and the history of this country shall be written, on this part of the American continent under the British flag will be found one of the most prosperous and contented peoples on the whole broad earth. A writer in an American magazine has said that Ontario with its bracing atmosphere can raise the finest stock, and it must be that same atmosphere that enables us to raise the handsomest women and the hardiest men on the continent. Let us ever have as our motto: the advancement of agriculture as well as the progress of the commercial interests of the country. Let us love our land and teach our children to love it. I have no respect for a man who does not love his own country. A man at the Chicago Exposition said that Canada did wonders for a small country. I told him that we had a country, leaving Alaska out, that we could drop the United States into and leave a fringe all around. (Laughter and applause.) I wish to leave a pride in Canada as a legacy to my child, that he too may be proud of this goodly land, and I know it shall ever be worthy of admiration if the agricultural interests are not neglected.

WINTER DAIRYING AND FARMING.

Mr. D. M. Macpherson, M.P.P., delivered the following address:

It is with feelings of the greatest of pleasure that I am here to join you in rehearsing our farm experiences, to give and receive knowledge and exert our best endeavors to elevate ourselves to a high plane of intelligence, and thereby exert a beneficial effect on the results of our everyday work on the farm.

The history of the work done by dairymen's associations of this province is favorable for the promotion of intelligent work; and the governments, recognizing the great good which these meetings have done and are likely to do in the future, are lending substantial financial assistance for their continuance, and promotion of more successful work.

The subject of winter dairying and farming, which I have selected for this address, is of great importance in the upbuilding of the agricultural interests, and the magnitude of its bearing on present and future results causes me to somewhat hesitate to undertake its elucidation lest I fail in the endeavor. I shall not attempt to deal with this subject in all its bearings, but shall select only those branches of it which may be new and useful.

The present experiences of most farmers and dairymen are that land is gradually declining in fertility, crops reducing in yield and increasing in uncertainty to grow, and prices of farm produce are yearly falling to a lower level—all of which makes the working of farms less profitable, and in many cases the experiences at the end of each year indicate a decided loss This creates other regrettable conditions. Young men brought up on the farm, noticing such experiences, are discouraged and leave their homes often not sufficiently educated to meet the requirements of the times or the positions they aspire to in other vocations of life. They leave their parents behind on the farms, who often become involved and discouraged, and life to them afterwards is unhappy and forlorn. These undesireable conditions arise wholly from the fact that farming in general has not and does not pay. The average value of a day's work on a farm during the whole year represents not over—at the present time—50 cents to 75 cents in cash. This can be easily reckoned by taking the number of days' work employed usually on a hundred acre farm and dividing them into the average cash returns from sales of produce made. For instance, I find that in our county it takes about two men the year round on the average to work one hundred acres of arable land. This would be about 600 days' work for the whole year, and the average cash sales from such a farm would be about $300 to $500 yearly. This would be the cash result from 600 days, or say an average of about 60 cents per day the year round. This is all the farmer has for his work, capital and wear and tear, besides a loss of perhaps $50 to $100 fertility to his farm yearly. A farmer, to work himself, hire one man for the whole year, live, keep up expenses of taxes, schools and church, wear and tear and clothing, and stand an occasional loss from fire, death, drouth or drowning of crops, and do all this from $500 per year, finds it very hard to live fairly well. A very few are saving a little money when conditions of family and market are favorable. A few more are existing and keeping out of debt, but the majority of farmers are at the present time going more and more into debt, and when farms are sold it is found there is from 25 to 50 per cent. of a decline in value, in the last fifteen years. This is, I think, a true state of our agricultural experience. And how to remedy this deplorable and unprofitable condition of farming is the all-important live question of the day.

What procedure will we take to make an average day's work for the year worth more money in cash, besides increasing the yearly fertility of the farm, and thereby insuring a progressive and advancing state of prosperity and profit, besides adding an increased value to the land? And if, in addition to all this, it can be actually practised to employ fully double the number of men than has been employed in the past, and increase their cash value of results to two dollars per day, what a gain it means? If all this can be done, surely we can say that a change for the better will be experienced. In answer to this question I desire to here state that I have been enabled to do this through the practice of winter dairying or fattening of store cattle, conducted on a new and comprehensive plan, which is based upon agricultural science, good business principles and good practice. The whole benefits of winter dairying are not fully understood nor appreciated by farmers generally, and the methods employed are not always such as to produce the most profitable results both directly and indirectly. This arises largely from want of scientific knowledge bearing on the wants of the milk cow in food and treatment, as well as the wants of the plants while growing.

Many farmers think that science has nothing to do with farming—no greater mistake was ever made; and this one idea of prejudice to scientific research has marred and kept back progressive and profitable farming more than anything else. I here declare emphatically that no farmer at this stage of agricultural experience can do without the assistance of all the scientific knowledge known to man up to the present time, relating to animal and plant life—or agriculture as a whole. Without going very far into this question of science, let me mention a few facts or truths to illustrate my position. All life, whether plant or animal, must have food in suitable amount and composition, time and place, before it can exist.

The composition and constituents of all plants and animal bodies, as well as plant foods and animal foods, are the same, although in different proportions and combination. For instance, grass, hay, grain and milk have the same composition as the bodies of a horse, a cow or a human being ; and the composition and constituent of good stable manure is the same as grass, milk and animal bodies. 100 ℔ of stable manure has the same constituents as 100 ℔ of grass, 100 ℔ of milk, or 40 ℔ of the live weight of a cow, horse or human body.

All animals require in their food mainly three things : bulk, flesh formers and heat formers. The bulk is to promote and assist proper digestion of all foods. The flesh formers are to nourish the body, and the heat formers are to give and maintain heat in the body. The bulk food and heat formers come mainly from the air during the growth of the plants, while the flesh formers come mainly from the soil. All animals can absorb and give off in milk, flesh or work only a small proportion of the composition of their food, the balance (from 80 to 95 per cent.) is returned to the manure pile. In this way the important and valuable law is observed, that the plant feeds the animal and the animal feeds the plant.

To more fully illustrate these truths let me give the constituents of a balanced ration for a day for a cow giving milk in winter. In this ration there are 24 ℔ of dry matter or bulk, there are also 2½ to 3 ℔ of flesh formers and 14 ℔ of heat formers. There is in this balanced ration the same as is found in 100 ℔ of milk, *i.e.*, the flesh formers in 100 ℔ of milk are 2½ to 3 and the heat formers are 14 ℔. In feeding this balanced ration to a cow she is able to give in return in the milk pail only 20 ℔. The residue has the milk constituent of the 80 ℔ left, but it is converted into plant food in the form of stable manure, when properly used and none is lost. It can again be converted into milk through the agency of the plant, such as grass, hay or any other food that may be grown.

Many here may say, What has this to do with winter dairying? I desire to say it has everything to do—in the business calculations it means either a profit or a loss—prosperity or ruin.

I have given you a few illustrations of scientific truths by way of example. Let me now estimate the value of science from a business standpoint of calculation.

We know from science that a milk cow should have 25 ℔ of bulk food and 2½ ℔ of flesh formers and 15 ℔ of heat formers, and this contains the equivalent of 100 ℔ of milk, and by feeding this she will give about 20 ℔ of milk per day, and the balance of this, which is 80 ℔, is returned as fertilizer ; and we know (many of us from sad experience), that the land needs largely to be fertilized and made rich, and we also wish to receive a saleable product to convert into money. So by feeding a milk cow well we have the two necessary requirements for successful farming—a cash product and a fertilizer. To fulfil the requirements of supplying such a food, it is necessary for the farmer to do three things, which are : he must produce, he must purchase and he must sell. The question then follows, What should a farmer produce, what should he purchase and what should he sell? To answer these questions correctly requires a very close business calculation, and every farmer must figure this problem out for himself, because so many different locations for market and environments vary that it is impossible to lay down precise rules for each section of country. But one infallible rule must always be adhered to, and that is, where and when an article can be produced on the farm cheaper than it can be purchased, then it should be produced; but when a necessary article or material can be purchased cheaper than it can be produced on the farm, then it should be purchased. And again, the aim should always be to produce or purchase—a cheap article and convert it into a dear article.

Another rule which stands good is that animal food constituents are cheaper relatively than human foods ; for we know that the composition of a balanced ration for a milk cow or beef animal can be obtained for about 12 cents, and the same material which this ration contains can be converted by proper skill and care into 100 ℔ of milk, which is worth one dollar.

Before we are able to obtain a day's ration for a milk cow, containing all of the constituents in proper proportion and conditions necessary to meet the wants of the cow to perfection, it will be necessary to find out from scientific research what the daily needs of the cow are. Then we must know the composition of animal foods that should be grown on the farm, as well as all foods for animals offered for sale. Then, after we have acquired these points of information, we must then acquire a knowledge what each article of cattle food costs to produce on the farm and to purchase in the open market.

I have stated that there are three things necessary to make farming a success, which are—to obtain a cheap article, sell a dear article, and at the same time add fertility to the soil. Obtaining and feeding a balanced ration to a milk cow, which costs the least expense to obtain and produces the most milk and returns most fertility to the manure pile, are conditions which, when attained, I hold, solve the problem of successful farming.

Let me now give you my methods of calculation in several different forms—the most expensive and the least expensive way in obtaining a balanced ration—and I would ask you to carefully note the comparison. A balanced ration, I have already said, should have bulk and nourishment, and the bulk parts come largely from the air and the nourishment comes entirely from the soil. The bulk parts we can either produce or purchase, and with the nourishment we can do the same—produce on the farm or purchase from others. If we produce bulky foods the exhaustion of the soil is light, and if we purchase bulky foods the addition to the fertility of the soil is also small. But the reverse of this is experienced in producing and purchasing heavy nourishing foods. If we produce heavy grains for food it exhausts the soil very rapidly, but if we purchase heavy nourishing foods it adds to the fertility of the soil very much. Now, it must be clear to the average farmer that if he can produce bulky foods such as hay, corn and roots cheaper than he can buy them, he has two advantages: the soil is exhausted as little as possible, and he obtains one of the most important requirements of a balanced ration at the least cost. Again, if he finds he can purchase the heavy nourishing foods, such as bran, oil cake, cotton seed meal, pea meal, gluten meal, etc., cheaper than he can produce them, he has also two advantages in this, which are, nourishment at the least cost and most fertility added to the soil. From these considerations it will be noticed that there are four ways of obtaining a balanced ration for a milk cow or any domestic animal. The following is the comparative cost of obtaining the four requirements necessary for a balanced ration: producing the bulk of a ration in corn, hay and roots will cost about two to three cents; in purchasing the same in corn, hay and roots it will cost eight cents; in producing the nourishment on the farm it will cost fourteen cents, and the same requirement can be purchased in heavy cattle foods for eight to ten cents. In combining the two requirements of bulk and nourishment the cost of the four different methods is as follows:

1st. Producing nourishment and buying bulk will cost 22 cents.

2nd. Producing nourishment and bulk will cost 17 cents.

3rd. Purchasing nourishment and bulk will cost 16 cents.

4th. Purchasing nourishment and producing bulk will cost 11 cents.

An important fact to be noticed in regard to these several ways of obtaining a balanced food for cattle, as well as the comparative cost, is this, that the result produced in milk would be the same in all, and should produce about twenty pounds daily, worth over twenty cents, and the selling of this amount of milk carries with it about two cents worth of manurial constituent. If all parts of this ration is produced on the farm, and the milk is sold, the stock of fertility of the farm is reduced thereby by two cents; but if all the ration is purchased the residue of fertilizer left after being fed is worth ten cents, and this amount is added to the stock of fertility of the farm, this same ten cents' worth of fertility can be converted into 80 pounds of milk in the future. Again, as the main part of soil fertility is in the concentrated foods and a very small part in the bulky foods, so by producing as far as possible the bulky foods such as hay, corn and roots, and purchasing the heavy concentrated foods, such as bran, oil cake, cotton seed meal, gluten meal, pea meal, etc.,—whatever is cheapest according to feeding and fertilizing values—we obtain the combination necessary for a balanced ration at the least money cost and least exhaustion to the soil, and at the same time add most to the stock of fertility already in the soil of the farm.

By carrying on this plan in winter, supported by the previous growth of bulk foods in summer, the winter is made to be a season of large direct profits and at the same time to be a source of larger cash profits during the following summer; and if the rotation of crops is properly conducted in the summer, it is made to be a source of increased direct cash profits during the next winter, and so on, enabling the future to be progressive in profit and added fertility to the soil of the farm until the maximum is attained. And I here say that when that point is attained it will be far in advance of the highest conceptions of farmers at the present time. It is high time for farmers to adopt an intelligent system of direction of farm work, which will produce an increased direct profit as well as prepare conditions and groundwork for progressive profit in the future from year to year. Then when this system is adopted two benefits will be realized, the direct cash value received from year to year, and at the same time a very largely increased value of land arising therefrom. All farming land is governed by the same commercial law as all capital invested in business, which is, that farm lands are valued in proportion to what profit they produce. The lower the profits realized from working land the lower the value of that land per acre, and the higher the profits the higher the value of such land per acre.

I wish to give you one more illustration to forcibly impress on your minds the value of good business calculations in the provision of winter food for cows in three different forms of comparison, on lines spoken of. One acre of corn ensilage is grown and represents say twenty-five tons, at a cost of $20 to raise and feed. If this is fed to four dry cows all winter it makes $20 of a loss—as no cash product is received from them. If fed along with the product of six acres of grain mixture of oats, barley and peas at an additional cost of $60 to raise and feed—given to four milk cows—there should be about $100 worth of milk sold Deduct from this $80, which is the cost of feed and labor, and there remains $20 profit from seven acres of land. But the disastrous effect of this transaction is that ten dollars of the fertility of the farm is sold off in the $100 worth of milk, which reduces the value of the whole farm If this acre of corn is fed to these milk cows, along with $60 worth of purchased feed, we have the same milk product as when the grain is all produced on the farm, and this leaves $20 profit from one acre of land. Add to this the value of the fertilizers received from the $60 worth of heavy feed and we have the constituents, after allowing a loss of ten per cent. of 4,000 lb. of milk, or a money value at 80 cents per 100 lb. of $320, and the possible cost of converting this constituent into milk in the future will be about $150. Allowing interest at 6 per cent. and $1 per day for labor, this leaves a direct profit of $20 on the acre of corn besides a future profit of $150. Many of my hearers and others will question the accuracy of these startling figures, and will not believe them to be true or reliable. One point, however, you all must admit is that the growing of corn and purchasing of heavy feed and fed to milk cows must add fertility to the soil to some extent. If this is admitted then the question must be answered correctly how much? The answer to this question which I have given to you is based on carefully worked out figuring, and proved to be correct from actual test—and I confidently believe the future will prove and confirm its accuracy.

While I have briefly mentioned a few important scientific agricultural truths, and worked out by way of illustration also a few important business calculations arising therefrom, it still remains for me to refer to the third important principle of agriculture and that is good practice. Before good practice can be carried on to advantgage on any farm it is absolutely necessary to have a plan; to devise the best plan of work suitable to take advantage of all the environments of each farm in accordance with what work is to be done and product sold. The main factors that should be considered in devising a suitable plan are—climate, soil, location, railroad communication, markets to buy in and markets to sell in, cost of labor and machinery, etc. Everything should be figured out so as to obtain the cheapest article in the market laid down on the farm and transform this article by skill into the highest market value at the least cost; or, in other words, with a minimum of cost produce a maximum of value. It is not possible for me to enter into details of such a plan, as the time at my command would be too short. But I will give you a simple practical plan of work which I have practised on several farms under my control at the present time, and will then conclude by giving you the practical results of the working of such farms. This, I believe, is the true test of the value of all plans or proposals. When the plan of work is known and the results are known then the whole matter is a guide which is reliable for others.

The plan of work, rotation of crops, etc., which I now suggest is for a hundred acre farm, having a house and barn, all cleared and under the plow; located anywhere within six miles of a railroad and in the eastern part of the country; suitable for the dairy business, but much worn out and unprofitable to work in the old fashioned way of mixed farming and dairying, in milking cows in the summer and let them go dry all winter. Four acres of this land are allowed for house, buildings, garden and orchard; the balance (ninety-six acres) comes under the proposed plan of work. The farm is worth say $3,000. The aim shall be to make it profitable to work and enrich the soil from year to year—the crops to raise are corn, hay and grass. The purchased products shall be heavy foods, such as bran, oil cake, cotton seed meal, pea meal, gluten meal, or any cheap nutritious bye-products, and milk and pork shall be the main salable cash products for both summer and winter, and all extra-food over what the milk cows and pigs require shall be converted into beef in the winter. To fulfil these aims, the following division and rotation of crops are made:

$\frac{1}{6}$ or 16 acres are devoted to ensilage corn.
$\frac{1}{6}$ " 16 " to grain; half to matured grain, other half to green feed.
$\frac{1}{6}$ " 16 " to clover mixture for hay.
$\frac{3}{16}$ " 48 " to pasture.

This will accommodate a beginning of thirty milk cows, with a calculation to increase five cows each succeeding year, until a maximum of sixty cows is attained; and it is possible by good work to make this farm carry eighty milk cows summer and winter. A stable for sixty cows and silos for three hundred tons of corn ensilage are required. The stable is built on the most modern plan, to fulfil the four requisites for success, which are: (1) saving of fertilizers; (2) saving the health of the cows; (3) saving of labor; (4) saving of cost of construction. It is so built also that an addition can be made at any time in the future to add to its capacity and water is given to the cattle in the stable and it never freezes before them. The variety of corn that is planted for ensilage is the mammoth sugar corn, or the Virginia horse tooth. The grain is a mixture of oats and peas sown very thin, and grass seed added in large quantities—a mixture of timothy, 10 lb.; red clover, 5 lb.; alsike, 5 lb.; June grass, 5 lb.; red top, 5 lb. per acre. The hay is cut on green side and only one crop is taken off before turning to pasture. All the manure of the year is put on the grass stubble after the hay is cut, and then three years' pasture is taken from this top-dressed land. For the first few years there will be corn and hay enough for sixty head of cattle, and there only being thirty cows to start with, an addition of thirty head more of steers are put in to fatten, thus making sixty cattle fed during winter, and they will make enough of manure to cover the sixteen acres of top dressing for pasture. The purchased feed required with the corn and hay will be about $10 per head for the winter. The fields are all well surface-drained and the whole farm divided into sixteen acre lots. There should be in the first few years 250 lb. of superphosphates added to each acre of corn when planted, to force its growth and ensure a good crop. All plowing should be done in the fall, breaking up sixteen acres of green sod, and there should also be sixteen acres seeded down each year.

The following prospectus of results is a fair estimate of what might be expected from working ninety-six acres of land as described by the above-mentioned plan five years after being worked under ordinary conditions:

Capital Invested.

100 acre farm, worth $30 an acre	$3,000
Stock and improvements	2,500
	$5,500

Cost.

Labor—three men year round	$750
Extra for milking	150
Interest on $2,500	150
Wear and tear, taxes, etc.	150
Purchased feed for cattle (winter)	600
" " pigs.	200
	$2,000

Receipts.

Milk sold from sixty head milk cows.	$2,500
Pork sold—fifty pigs	600
Cash profit, $1,100	$3,100

I shall now give you a short personal history of my experience in winter and summer dairying on my home farm—and results from carrying on this plan for past five years with slight variations of divisions of crops, but the rotation and direction of work are the same. This farm is located at Lancaster, Ontario. Some twenty years ago I plodded along working the old hereditary practices of grain-growing, and milking a few cows during the summer, and letting them go dry early in the fall and feeding all cattle as cheap as possible during the winter months, mainly on straw and a small portion of hay I found that about sixty to seventy-five cents per day in cash all the year round was all I could make out of a day's work, and having to pay seventy-five cents to one dollar for a day's work to hired men, I concluded that farming on this plan was not the work for me, and decided to change my occupation. I soon found an opening in the cheese and butter business and entered this line of work and am largely engaged in it now. In the meantime my home farm was rented for fifteen years. The person who had it rented could not make a living and pay a fair rent. Five years ago I started to work this farm. I was determined to test the possibility of making a poor run out and unprofitable farm be a profitable farm, having rich fertile soil. My early years' experience on the farm gave me a great desire to master the science of farming, and I persisted in studying the best writers and authors on agricultural chemistry. I noticed in practical life that mostly all professing scientific farmers made farming a financial failure, and that many rich business men who attempted to practise farming had the same experience, and were invariably a failure. I also observed that many practical farmers fail to make farming a financial success, and the causes of these failures I believed, were that they did not apply the benefits in full combination of *science, good business* and *good practice.* I set to work to combine, if possible, these three requisites, and I now give you the crop and results of the summer of 1894—six months. The one hundred and twenty acres under crop were divided as follows: forty acres in ensilage corn; twenty in grain, and twenty-five under hay, and thirty-five acres under cow pasture. There were seventy head of cattle (sixty-five milk cows and five dry cattle) pastured day and night all summer on the thirty-five acres, and no extra feed supplied until October, when some corn and bran were given.

The crop inventory for the summer is as follows:

80 tons of hay, worth $6 per ton	$ 480
700 tons of ensilage, worth $2 per ton	1,400
700 bushels of grain, oats and barley, at 35 cents	240
Milk sold	1,800
Calves sold	180
Pork sold	450
	$ 4,550

The labor employed is four men the year round, and about 200 days extra broken time, in all about 1,400 days; the cash sales for the year is $3,500, and after deducting the purchased feed from the gross cash sales, it leaves about $2,800 or $2 per day in cash for the average of the year, and will leave $1,200 cash profit. Besides, in the five years the land has more than doubled in value. Such are the results of this plan of work on this farm.

Three years ago I undertook to assist a poor farmer having a fifty acre farm which was very much run down, and he was greatly in debt and could not make a living on it. I loaned him $1,800 to build stables for thirty-two head of cattle, a silo to hold two hundred and fifty tons, a windmill, water-tank and all complete, and also supplied twenty-eight head additional to what he had of milk cows. He worked on the same plan as the one proposed, and this last year, the third year since he began, he has paid back the entire amount advanced to him. One of this man's neighbors said he could have bought the front part of that farm five years ago for $400 or $500, but that he would not have taken the back part for a gift. The owner of that farm put on the fertilizer from his heavy feed and cotton seed meal and bran for three years, and his farm is now worth $2,000.

Mr. Howard Bissell: How did that man keep thirty-two cows on that farm?

Mr. Macpherson: He rented a small field from me for day pasture. He had twelve or fifteen acres of corn; his silo holds two hundred and fifty tons. He sends his milk to Montreal, and gets thirteen or fourteen cents per gallon f.o.b.

Mr. Bissell: Ah! that brings it up.

Mr. Macpherson: And so confident am I that this can be duplicated, that I have just concluded an agreement to advance two to three thousand dollars to work a one hundred and sixty seven acre farm on joint account. The said farm has a five thousand dollar mortgage and other debts, and I hope and expect to be able to pay off all this liability from half of the profits in eight to ten years and at the same time double the value of the land. This will be, perhaps, the best test ever undertaken, and I shall watch with much interest the result of this venture. If this case is a success then I need not hesitate to state that it solves the problem of how to make a poor farm profitable. In conclusion, and summing up the purpose of this article, I have striven to show the importance and value of scientific knowledge in relation to agriculture, and have also impressed the importance of good business calculation in formulating a plan of work. I have given you the practical results of working out this plan in two cases of five and three years each, and have also told you of the courage of my convictions in investing capital on joint account to work a mortgaged farm on such a plan. And should you believe that any statement made in this paper is not true or founded on fact, I invite the Executive of this Association to send a delegate to visit my farm this coming summer, in July or August, and I would be pleased to invite any other person who wished to come and see for themselves. I can assure you I will be delighted to show and explain all that I can. Seeing compels believing. Winter and summer dairying is the key to the whole problem at the present time, and I strongly advise all farmers to feed well in winter and milk their cows for 10 to 11 months, and keep up the flow of milk to as high a point as possible by good farming the year round.

The meeting then adjourned until the evening.

SECOND DAY—EVENING SESSION.

The Opera House was packed long before the hour of opening, a fair proportion of the audience being ladies. Mayor Cowan presided, and called the meeting to order at eight o'clock

AGRICULTURAL PROGRESS IN ONTARIO.

Hon. John Dryden, Minister of Agriculture, received an ovation as he rose to speak. He said: I desire to congratulate this and kindred Associations on the continued extension of the dairy work in this province, and also on the improvement that is to be seen in the quality of the products. There is still a great deal too much produced that may be called inferior, but this begins now to beg for a place on the market. Quotations in the daily newspapers constantly read "High grades in demand; inferior not wanted." This is precisely as it should be, and is after all an essential complement to the educational work carried on by this Association. A man can be educated towards better production by an appeal to his pocket when an appeal only to his better judgment would have no effect whatever. And so long as he finds a ready market for that which is inferior even at a lower price he goes on in the old way. I have no sympathy with those persons who insist in these days on wasting their time and labor, besides the raw material, in producing something that is entirely unfit for human consumption. I hope the influence of this Association will always be in the direction of driving such persons to the wall. If a dairyman in these days does not know he ought to know. Instructors are all about him. Accurate information is within easy reach without money and without price. This province is adding to her splended educational equipment, schools, colleges and associations which give practical lessons on the "how" as well as the "why." If they will not come to the school the school is brought to them until there is absolutely no excuse for ignorance. Does a mistaken man think he knows how to proceed and finds after starting that he lacks the proper knowledge, these associations send someone to instruct him and set him right, with the view first of helping him as an individual, and secondly of keeping up the average quality of the product to the given standard.

Our associations have set before them a high ideal and are constantly reaching towards it, coming, I think, a little nearer year by year. That ideal is perfection in our dairy products. The score card of our cheese exhibit at Chicago showed conclusively that some of our dairymen had almost reached perfection. With a little stimulation and encouragement it is possible for the majority of our producers to come much nearer this ideal than ever before.

I congratulate you also on the further cultivation of our home market. As some of you know, I have always taken the ground that if a better article were placed on our home market the consumption would be advanced considerably. Many persons are asking the question why is it that we do not export more butter? We certainly are producing more than in former years; our creameries have increased 100 per cent. in a few years and the natural result looked for would be a corresponding increase in our exports. The reason is not, I think, far to seek. By the education given to our people generally we have now taught them the luxury of high grade creamery butter, and the result is that our principal markets can scarcely be supplied with the particular grade that is demanded. The cry among the Toronto dealers is, we cannot get enough of a really superior article. The result is that the finer grades of butter are utilized for our home market at good prices, and there is little left to send abroad except that which is inferior and which will not pay the transportation charges.

In past years it has been found profitable to buy butter made in summer and place it in cold storage, holding it until winter, when, although it was stale and off in flavor, a fair profit was made. The winter creameries are destroying this trade, which will, no doubt, be more and more unprofitable. Our own people demand, and are willing to pay for, butter and cheese of the best quality, and they ought to get it.

I think, however, it is right to raise the question here. Supposing we did have a large quantity to export, how should we send it? I do not hesitate to say that there is need of better shipping facilities if we are successfully to meet our competitors abroad, who are able at the present time to put their dairy products on the English market in prime condition. When the producer of a fine article in this province has to turn his attention to foreign markets he will find himself handicapped and at the mercy of railroad and steamship companies. An effort ought therefore to be made by those interested to secure better shipping arrangements on the principal lines of railway. We ought also to have better transportation facilities on the ocean steamships. I do not know that it is necessary for this purpose to have a fast line, but it is necessary that something like proper accommodation should be provided, and that fixed and reasonable rates should be guaranteed to the producer. I am sure all dairymen will agree that we would rather do without some of the bridges and post offices that are being built in doubtful portions of the country, if we could only have instead cold storage buildings provided at our shipping points for our dairy products.

With a view of encouraging this industry in Australia, the government of that country have erected cold storage buildings at the principal shipping points, where the goods are received and inspected. If the proper standard, they receive the government stamp and are placed in storage, and from thence are taken into similar apartments on the steamship and landed in England in first-class condition.

I believe that in Canada, and especially in this province, we can produce the very finest cheese and butter, but we have no chance in a foreign market without proper arrangements for transportation. In many districts where dairying is to a large extent a new branch of agriculture, my observation leads me to say that one of the greatest mistakes made is in the selection of cows. A short time since I met a gentleman who had been induced to engage in dairying in a small way, and he remarked that there was nothing in dairying at all. I asked him why, and he replied, "Well, I do not believe my cows have made more for me this season than $10 each, and I tell you there is nothing in it." I replied that it was scarcely fair to say there was nothing in it when men had netted $50, $60, and even as high as $80 per cow; "If," I said, "you could get that would you not think there was something in it?" "Well, yes, I would." What is wrong in a case like this? It is that he has no right ideal, no true conception of what he wants in his herd of cows in order to succeed. He has simply taken such cows as he had at hand, and perhaps a few others picked up at random, without regard to their ability to produce milk, and the result is that they do not give sufficient to pay their board. I have frequently observed even with dairymen themselves an absolute lack of uniformity in their herds, and it appears to me that our dairy associations cannot commence too soon to give some special education along this line. A man cannot expect to succeed in gathering together a herd of suitable cows unless he knows definitely what object he is seeking to attain. These definite ideals ought to be presented to the people interested, so that in addition to their experience and observation they might have information that would be helpful in bringing them to a correct conclusion.

There are portions of our province yet to be settled that in my judgment are admirably adapted for dairying operations. Since my trip through a portion of Algoma and the Rainy River district some fifteen months ago, I have been convinced that there are large sections of that country in which the possibilities are very great in this direction. Some of us have been of the opinion hitherto that the country is too rocky and barren to be worth much from an agricultural point of view. I learned from personal observation that my former conviction in this regard was an entire mistake. I have often wondered why it is that settlers insist on going to the prairies of the west rather than locate at some of these points. A man with a family and but little capital can certainly carve out for himself a home much more easily where he has timber for fuel, fencing and building close at hand than he can in a prairie country.

And now, perhaps, you will not be offended if I venture to tell you a little government secret. The Ontario Government has decided to ask the Legislature at its next session for a small grant with which to establish what I shall call a pioneer dairy farm, in one of the districts of northwestern Ontario that is not now settled. We shall choose a location on the line of the Canadian Pacific Railway where we shall probably find in one block sufficient good land to make two or three townships. Here it is proposed to demonstrate by actual test what are the possibilities of that district in the dairying industry. A country that grows naturally white and red clover, that will grow immense crops of timothy and also produce good crops of ensilage corn, heavy crops of oats and the very finest of roots, must be, in my judgment, suitable for this purpose. The roads used in the construction of the C. P. R 15 years ago are now found covered with a rank growth of clover.

The winters are somewhat longer, but the early snow remaining through the winter preserves the grasses much better than in eastern Ontario.

It is not proposed to put up expensive buildings but such as may be taken as models by any farmer coming into the district. They will be built of the timber found there, and pains will be taken to make them comfortable and convenient. They will be such that anyone looking at and examining them will be able to say that they can go and do likewise.

I have already had samples of the soil from some of these points sent to Toronto. I find it to be of great depth and composed of very rich clay, free from stone. I also find that this northern country is extremely well watered, abounding in rivers and lakes in every direction. These lakes are full of fish, and the industries carried on in that connection will eventually be very large. In 1894 there were three and a half million pounds of fish shipped from Rat Portage alone.

It is not, however, proposed to locate this pioneer farm quite as far west as Rat Portage, but somewhere between Port Arthur and that point, probably near the crossing of the C. P. R. at Wabigoon river. Besides Wabigoon lake, which is near at hand, there are other large lakes in the district, some of them ninety miles in length and others from ten to twenty. Various scale fish abound in these lakes, notably lake trout, whitefish, pickerel, etc. I mention this because these things will be helpful to the settler who may be induced to locate in the district.

Portions of the district have been burned over and the large timber burned off. It is now growing up with smaller timber, but this is not of sufficient size to interfere seriously with clearing operations I am told by those acquainted with the district, that after the underbrush is cleared off there is no difficulty in plowing considerable portions immediately. Green standing timber is to be found within easy reach, which can be utilized for fencing and building, mostly elm, birch, tamarac, poplar and some cedar.

It will be remembered that the C. P. R. on their long line of railway, run dining cars and thus cater to their passengers, and there is therefore a constant demand along the line for all the dairy products of a good quality that may be available.

To induce settlers to go into this new territory and utilize these waste lands in sending forth a largely increased quantity of the finest dairy products means to add to the wealth of the whole country, and everybody, I think, ought to be interested in the consummation ot such a project. In the Rainy River district we have one or two million acres in a solid block equally good to that found at points along the line of this railway, but at present there are no railway facilities. If, however, it could be proved that the district generally is capable of producing the finest dairy products, I have no doubt that settlers would be induced to locate in this unsettled portion of the province. I might add in reference to the country that many of the rivers are capable of supplying abundant water power. At the C. P. R. crossing of the Wabigoon there are two or three falls capable of being utilized in this connection.

As regards the climate, undoubtedly snow falls in this district early in the season, but it must be remembered that the ground becomes covered before it is frozen to any extent. In the spring the snow is carried off, not by rain, but by the heat of the sun, and when it is removed, the plow may start immediately, so that the spring season is not much longer delayed than in some of our eastern counties. (Applause.)

GOOD ROADS FOR THE DAIRYMAN.

Mr. A. PATTULLO, President of the Western Dairymen's Association, was introduced and heartily received. He said: The Minister of Agriculture, in his admirable address, said that he brought you greetings from the Ontario Government. As the head of the Western Dairymen's Association I bring you greetings from your sister society. It gives me genuine pleasure to be here to-day, and I almost feel like making a friendly comparison of the work done by your excellent Association here in the east and by our own in the west. I have not time this evening for that, but I would merely say that we are moving together, not in rivalry or in jealousy, but in friendliness and with mutual emulation and encouragement.

I took a peculiar interest in Hon. Mr. Dryden's address. For some years I have been calling the attention of young men to the splendid country in the northwestern portion of the province, as we must prefer to see our youth kept in this country rather than have them going to the United States. I advocated such a movement a year ago at the banquet tendered the Western Dairymen's Association. I do not think the Ontario

Government ever did a better thing than the establishment of a model dairy in Algoma in order to open up that splendid territory. It is a step that will meet with the approval of people of all classes, more especially with the farmers of the province. There is a splendid future before any active young man who will go to those fertile sections described by the Minister of Agriculture, and set to work in real earnest after he gets there.

I have selected my subject for the evening out of deference to the audience before me. I think the practical men here have discussed almost every phase of the cheese and butter making question, and therefore I have chosen what may be called a little side issue, although it not only affects the dairymen of the province, but every man, woman and child, east and west I refer to the relation of the public roads to the dairy industry. Perhaps some of you will wonder what I am going to say. I am not going to speak of the road that is said to be paved with good intentions, or of the straight and narrow way that the clergy tell us we sometimes get off of, or of that broad road that leads to where I need not mention here. I wish to confine myself to the rural highways These affect every one of us. Good roads have an important bearing on the success of dairying. There is no question discussed at our dairy gatherings which has a more direct and important bearing on the prosperity of the dairyman. If I cannot satisfy you of this, I hope some of you will come to me and ask me never to discuss this question again. From returns collected by our secretary we find that the hauling of milk to factories varies from 3 to 17 cents per 100 ℔. Let me show you what that discrepancy means. It simply means that for this one item some factories are paying five times as much as some others. If you can decrease the cost of hauling from seventeen cents to three cents you increase the profits of the dairyman by that amount. We have found that the average cost of hauling per 100 ℔ of milk is 8 cents. In this Dominion of ours we annually handle 175,000,000 ℔ of milk in the making of cheese, and as there is about 10 ℔ of milk to one of cheese, that means that 17,500,000 cwt. of milk have to be hauled to our cheese factories. Taking the average price of 8 cents per 100 ℔ of milk, that means $1,400,000 for haulage. There are about 2,500 cheese factories and creameries, which would make the average cost per factory for haulage $560, although I think $1,000 would be nearer the mark. But, for the sake of argument, and not to be charged with being extreme, I will accept $560 as the average. Now is it not a fair contention that by the reasonable improvement of our roads we can decrease the cost of hauling milk by about one-third? If we had such roads as they have in England and Scotland we could decrease the cost by fully one-half. Would it not be a good thing if we could decrease the charge for haulage by, say, $400,000? For every dollar you save by having better roads and decreasing the price of haulage is so much more in your pocket. $400,000 annually is four per cent. interest on the enormous sum of $10,000,000 You will thus see the immense importance of this question, and its direct connection with the dairy industry of the country. There are some parts of Ontario where it is not possible to run a creamery or cheese factory for profit, not because they have no good cows or intelligent farmers, or men who know all about the dairy business, but simply because they have not good roads. I have heard of an instance in which a cheese factory in western Ontario was actually asked 28 cents a hundred for hauling milk, or nearly 3 cents per pound of cheese. That meant bankruptcy. If 100 tons of cheese were made in that factory the haulage of milk alone would cost $5,600. Road-making is not only an important question; but it is *the* question of the day. I have heard Hon. Mr. Ballantyne say that when it was proposed to extend the dairying industry to Perth from Oxford, the first thing they had to consider was the matter of roads They at once proceeded to road reform and improved the highways. Some may ask, Why can't we have as good roads in this country as they have in Great Britain? We cannot have such roads at once. That we have done exceedingly well in getting our main roads in as good condition as they now are may be conceded. But there is no reason why we should stand still. We have been expending our energies in clearing land, and in building houses and constructing railways. In some parts of the province we have been wasting our energies in building two or three railways where only one should have been built, for a large number of these competitive lines of railway have fallen into the hands of rivals. It would have paid us vastly more if we had spent some of that money in making better roads instead of paying for some of those unnecessary railroads. (Hear, hear.) If some of the money sunk in railways had been spent in macadamizing rural roads there would be many more prosperous municipalities than there are today. But the time has now come when we should devote ourselves to the solution of the good roads problem. In most parts of Scotland and England the roads are almost as smooth as a billiard table. It has been said that over there the people have been taking centuries to build those magnificent roadways. It is not much more than seventy-five years since road reform was introduced into the old country. Again, we are told by some that our climate is against us in this matter of having first-class roads. I do not think it is. I believe it is as easy to make good roads in Ontario as it is in England. The frost is hard here on poor roads, but not on those which have been properly constructed. And I do not think the frost is more to be feared here than is the attrition from the frequent, nay, almost continuous rains of the old country. Most of you will remember the story of the boy in Scotland who was asked by an American, "Say, boy, does it *always rain* in this country?" "Naw," replied the lad, astonished at the stranger's ignorance of matters climatic, "sometime it *snaws*." (Laughter.) We in this province are just as intelligent, or more so, than the people of the old country, and we should equal or surpass them in this matter of road building.

I will now briefly touch the matter of statute labor. My friend the Minister of Agriculture is almost afraid to touch that subject, it has so many difficulties to his mind. I would not advise that we change our system of statute labor at the present time. But we are so used to this system that we hardly care to think of any other. But in most parts of this country we have not the system of statute labor in its entirety. Many municipalities spend thousands of dollars annually outside of statute labor for roads, ditches and bridges. Some municipalities have spent in ten years almost enough to macadamize the roads of the township. All that I would urge upon you is simply to start to make better roads. I am sometimes asked. "Do you want to revolutionize the law?" No, but we want to improve the roads. Amendments are being continually made to the Municipal Act. We should keep educating the people up to the idea of good roads. Depend upon it that our Good Roads Association will never ask for a change in the system until the people of the province are prepared to support them in their petition. But we do say, and say it strongly, that under a different or improved system you could do much better work on your roads than is now being done. No system can be successful which does not maintain and improve the roads during the whole six months of the summer. The very best time to do statute labor, or road making, is in May or early June, and not later on when the ground is so hard that it can hardly be worked. If your wagon breaks down you do not wait for several months before you repair it; but you do differently in the case of your roads. Road repairs should be promptly and intelligently made. The average pathmaster has not been sufficiently instructed in his work. There is too much changing of them. Too often the pathmaster is appointed with reference to his influence in the next municipal election, and not because of his fitness as a roadmaker. We want more permanency and more ability so far as our pathmasters are concerned. There are a few essential rules to be observed in the construction of good country roads. In the first place there should be more attention paid to draining. Unless the road be thoroughly drained it is waste of time and money to put metal upon it. Secondly, use good gravel. Very often what is called gravel is not gravel at all. I have seen alleged gravel consisting of stones ranging from the size of eggs up to turnips placed on the road for public service. Now that is not true road-making. The man who would dump such stuff as part of his work for the corporation should not be paid, but should be arrested for obstructing the public highway. (Laughter and applause.) But the pathmasters are now being watched, and in future the man who would allow such work as that to pass is going to be well criticized. Never place upon a public road any gravel in which there are stones which will not pass through a two-inch ring. Having spread the gravel, see that it is properly rolled. A five-ton roller used on the common roads of this province would give us good road-beds. Graders and stone-crushers should also be used. The Good Roads Association is collecting information from all sources concerning road making. If you want any information on this subject write the officers of that Association. It is sometimes said that our object in advocating better roads is to increase the number of officials. We are told that some engineers are in favor of it. As a matter of fact if you make any change or improvement in the system of road-making there will not be many more engineers employed The farmers and farmers' sons will be the future road-makers. There is not a farmer in this country who may not be made a successful road-builder in a short time. The boys who are now leaving the farm and the country will have something more to keep them at home; they will be the ones who will build our better roads.

In conclusion, I would say that while a man might speak for hours regarding the commercial side of this question, it has also a social side. Our farmers are the most isolated class in the country. Good roads will bring the agricultural community closer together. A man may live only five miles from his market town. and still he will be far away on account of the almost impassable condition of the roads. You cannot measure distance in such case with a surveyor's chain. Judge Woods, of Chatham, has written and spoken regarding the old and well settled county of Kent, where the roads are almost a bog for several months of the year. But those roads can and will be remedied, and what a boon that will be to those who have to use them. In my own immediate locality, in the county of Oxford, the farmers are drawing loads on our smooth roads that they never dreamt of doing before, simply because nature has made the roads smooth just now. The more you discuss this question of good roads the closer it comes home to each one.

The speaker concluded with an eloquent description of the English and Scotch roads, and spoke of the influence on the minds of the young of such scenes of beauty as the old country roadsides presented, and closed by saying that if Canadian farmers wished to keep their children on the farms they should make the farms, their houses and the roads more attractive.

HOW TO FEED A COW.

Prof. Robertson followed in an address upon cheap food for dairy animals, a report of which will be found in the report of the proceedings of the Creameries' Convention.

THIRD DAY—MORNING SESSION.

Judging by the large turnout at the closing session, which began at 10 o'clock a.m., on Friday morning, the interest in the Convention was unabated.

ELECTION OF OFFICERS.

The report of the Nominating Committee was read, and upon motion of Mr H. Wade, seconded by Mr. James Whitton, it was adopted. The list of officers appears on page 2.

REPORT OF INSTRUCTOR PURVIS.

I herewith submit my second annual report as instructor and inspector for the Eastern Ontario Dairymen's Association.

The district allotted to me was the same as last year, comprising that part of the province east of the Brockville and Ottawa branch of the C. P. R.

I received applications for visits from 74 factories, and visited 68 for the purpose of giving instructions and making inspections.

The factories visited, with the number of visits each received, are as follows:

Factory.	Visits.
Goldfield No. 9	2
Goldfield No. 8	2
Goldfield No. 1	1
Goldfield No. 6	1
Goldfield No. 4	1
Goldfield No. 5	1
Rose & Co. No. 2	2
Pendleton No. 1	2
Pendleton No 2	3
Morrison	1
Fournier	1
Tourangeau No. 1	3
Tourangeau No. 2	1
Craig & Son No. 3	2
Craig & Son No. 1	1
Courville	3
Curran	3
Ottawa Valley	2
E. Hawkesbury No. 1	2
E. Hawkesbury No. 2	2
E. Hawkesbury No. 4	1
Spring Creek No. 1	1
Spring Creek No. 2	1
Spring Creek No. 3	1
Spring Creek No. 4	1
Cockerell	2
Apple Bee No. 1	2
Apple Bee No. 2	2
May's Fancy	4
Metcalfe	3
Osgoode No. 1	1
Leitrim	1
Summers	1
Hemlock Corners	1
Morrisburg	1
Denison's	2
Pleasant Valley	1
Black River No. 2	2
Black River No. 3	1
Elm Tree	1
Nation River	1
Cobb's Lake	1
Ouillettes	1
Burnside	1
Treadwell No. 1	1
Treadwell No. 2	1
Brisbois No. 1	2
Brisbois No. 2	1
Brisbois No. 6	1
Black Settlement	1
Beaver	2
St. Anne	1
Balmoral	3
St. Isidore	1
Bright Star	1
Maple Leaf	1
Aberdeen	1
White Globe No. 3	1
East Matilda	1
North Matilda	1
Bouck's Hill	1
Pine Grove	1
Bainsville	1
Chard	1
Russell No. 6	1
McPhee's No. 2	1

Of the 126 days in your service, 96 were spent testing milk, 29 in travelling between factories and one attending court.

The amount of money contributed by factorymen for my services was $425.00. The amount from fines was $50.00, making a total of $475.00.

Of the 4,281 samples of milk tested by me with the Babcock and Quevenne lactometer, 46 were found to have been deteriorated, 35 of which were acknowledged and settled for by the payment of sums varying from $5 to $30 into the treasury of the factory to which milk was sent. Two were taken before a justice of the peace and fined, and 9 were let off with a warning, after promising to look after their milk in future.

I found a decided improvement in the condition of the cheese factories in this district, and the farmers taking more interest in the care of their milk.

There is a growing feeling in favor of paying for the milk on the Babcock plan, and over 40 factories were worked on that plan during the season with satisfactory results.

I found the makers as a class more willing to take advice and anxious for instruction than in former years, and my services more in demand than before, and I was warmly welcomed wherever I went.

The farmers were also anxious to learn all they could about the care of milk, and are getting out of favor with the old theory that any kind of milk is good enough to send to the cheese factory.

A. P. PURVIS.

REPORT OF INSTRUCTOR GRANT.

In presenting this, my first report of work done for the Association as inspector and instructor, I will try and give an idea of the work done, and present some of the conditions of the cheese business which came under my observation in the several districts in which I have been employed, viz., Campbellford, Madoc, Prince Edward county and part of Peterboro' section.

Owing to the factories not applying earlier in the season, work was not commenced until the 1st of June. Following is a list of the factories visited:

Factory.	Visits.
Myersburg	2
I. X. L	2
Stanwood	2
Star	2
Seymour West	2
Model	2
Warkworth	2
Prince of Wales	2
Brae	2
Trentbridge	1
Round Lake	1
Wellman's Corners	3
Bell	2
Harold	2
Marmora	2
Golden	2
Cold Spring	2
	2
White Lake	2
Alexandra	2
Brook Valley	2
Elzevir	2
Madoc	2
Spring Hill	2
Oak Leaf	2
Millbridge	2
Clair River	2
Spring Creek	2
Daisy	2
Tweed	2
Kervine	2
Beulah	2
Kingston's	2
Unionvale	3
Union	2
Black Creek	2
Port Traverse	2
Royal Street	2
Cherry Valley	2
Big Island	2
Cloverdale	2
Central	2
Bloomfield	2
Ben Gill	2
Grapevale	2
Maple Leaf	2
Roseneath	1
Westwood	1
Lang	2
Otonabee Union	2
Lakeview	2
Fleetwood	2
Daisy D	1
Cook's	1
Coe Hill	1
Crow Bay	2
Northport	1

Travelling 10 days, settling cases 2, lecturing to factories 2. Total number of days in the employ of the Association, 122.

The amount of money contributed by factorymen for my services was $287; amount from fines $153; total $440. Number of cases of adulteration 75; total amount of fines imposed, over $600.

In one factory alone the amount of fines imposed was $175. This is the unpleasant part of the work, but it is some satisfaction to be able to readily determine adulterations and have the offender punished. Although I found a good deal of adulteration, I believe there was as much more which I did not find, owing to the fact that the visit of an inspector in a section quickly becomes known. The foregoing facts amply justify the impression that at many factories a few patrons tamper with their milk more or less. Nothing will sooner damage a factory seriously than a well-founded suspicion in the minds of some of its patrons that some of the other patrons are getting more than their just due by supplying inferior or adulterated milk, which is pooled at the common value per cwt. with their own, which is in good condition and as the cow gives it. While some may think payment by the Babcock test will not give perfect justice in every case, I think it is undoubtedly ten thousand times better than the pooling system.

W. W. GRANT.

Mr. GRANT continued: In my report I have not been able to give in full all the details in the method of making, so I will simply ask your attention to one particular part of the system, viz, the handling and cooking of gassy curds. and the benefit derived from using sufficient rennet. A mistake which I found most of the makers making was not using enough rennet and over-ripening their milk. The result would be in the first place a loss in yield, and a cheese that was short in the grain and mealy, and in some instances the cheese would be what I call "punky." I have endeavored to observe very closely the action of rennet on milk this last year or so. In a bulletin by Prof. Conn, of the U. S. Department of Agriculture, on milk fermentations and their relations to dairying, he says of the fermentation of milk by rennet, "Many investigations have been made to determine how rennet acts on milk and causes it to curdle. The results are certainly not very conclusive nor yet very satisfactory, but the following general summary may serve to bring together the conclusions which are to be drawn from the facts thus far observed. Casein appears to be kept in partial solution by the alkaline condition of the milk, for it is easily separated from the milk by the presence of a small quantity of acid; but when thus separated it seems to be simply thrown from its solution without being altered in its nature, while the active principle of rennet has a very different effect on it. Under the action of rennet the casein is chemically changed. It is broken up into two nitrogenous bodies (proteids), one of which is easily coagulated, while the other is coagulated only with great difficulty. The former is readily thrown from its solution by salts of calcium (lime). and since these are always present in the milk, the result of rennet action is always to throw down the curd. This portion of the original casein is then manufactured into cheese, while the other portion, being soluble, goes into the whey and is thus lost to the cheese-maker. The amount of protein thus lost may be increased through the action of bacteria, which have the power of making even curdled casein soluble, and this fact teaches the advisability of using rennet in a manner which will produce the coagulation as quickly as possible. The rapidity of the action will depend upon the relative amount of rennet and the temperature." We see that Prof. Conn claims that the loss of casein is increased through the action of bacteria, and we know by experience that gassy milk will not yield so well as pure milk, hence there must be a loss somewhere. I think milk may be in a condition when 3 oz. of good rennet may be sufficient to give a good coagulation, and it may be in such a condition as to require 5 oz. of rennet to give as good a coagulation. The method of handling gassy milk which I have advocated is as follows:

Use enough rennet to coagulate the milk in a fit state for cutting in from 25 to 30 minutes, and if possible do not have the time from setting to dipping less than 2½ hours. By using sufficient rennet we get a firm coagulation, and have a curd which cuts nicely and lengthens the time of cooking, which should be done slowly, in order to give time to cook thoroughly. A practice which I found a good many makers following was to have the milk well matured. It would then thicken quickly if only a small amount of rennet was used They would then heat the curd up too fast, which would only be healed over on the outside. If a particle of curd were broken open you would see that the centre is soft and milky when such a curd is put through the mill, while whey will flow freely This carries off the richness, and the body of the cheese is injured.

I see that some makers claim that they can gain time in making from gassy milk by well ripening it. They heat it up quickly and dip it when the acid test shows a quarter of an inch. Then it is working fast, and they stir it to get the whey out. But in getting the whey out in this fashion they lose the moisture, and the acid has not properly developed. I think Mr. Bell has the proper mode of handling gassy curd. He urges the setting for about three hours and having it well cooked. It is the same in cooking curd as in cooking bread. If you cook it too quickly you will have it crusty on the outside and raw in the centre. From what I have seen this summer my conclusion is that 25 per cent. of our cheese-makers do not know how to cook curd. If it be well-cooked you will have a good body, with the whey cooked out of it. Leave a little moisture around the curd.

Mr. J. W. Newman: Last fall, about the 20th of November, there was a factory near us in which they had taken in one day about 4,000 lb of milk, and they were waiting for it to ripen. They went to use the rennet test about twelve o'clock and found that the milk had started to coagulate. It was too thick, although yet sweet. They concluded that they could do nothing with it, and sent word to the patrons to take the milk home again.

Mr. Macpherson: Why did they not put in the rennet?

Mr. Newman: They could not put in rennet; certainly they could not stir it up without getting it very riley.

Mr. J. Whitton: Did the patrons of that factory draw the whey back in the milk cans?

Mr. Newman: Yes.

Mr. Whitton: That accounts for it. If the cans were not properly washed or cared for there must have been some bacteria developed in the cans, thus producing the conditions described.

Mr. Purvis: In trying the rennet test, did they throw the sample they had used for the test back into the milk?

Mr. Newman: No.

CORN ENSILAGE.

Mr. John Gould, of Aurora, Ohio, was called upon to deliver an address upon ensilage, and after a few humorous opening remarks proceeded to say: Why do I come here to talk about the silo and its contents? Because, as I intimated in my first address, the farmer has become a manufacturer. He must understand the article and the machinery he is dealing with. To-day we are all linked together by a common interest—a better cow, a better product and cheaper food. If the machine does not run better now than it did a few years ago it is not the fault of the machine but of the man who handles it. My talk this morning is to be about the fuel for our machine. Near where I live is the great Sheridan Nail Works. They have one man, an expert, whose sole duty it is to buy the coal. His object is to get coal that has the most heating power and the least ashes and clinkers; he is after the most perfect combustion for his investment. What we need by way of fuel for our machine—the cow—is that kind of food which will produce the most animal heat. My father and his neighbors used to think that hay was the best, but on that diet it was all the poor cows could do to live until spring. In those days if a cow wanted heat, she was supposed to run around and get up warmth; but in those winters, more than one cow was to be found in that district leaning against the fence for support. (Laughter.) The more carbon in the coal the purer it is and the better for combustion; and as in the case of the fuel for the furnace so also with the fuel for the animal; why not get that which will be nearest to the pure carbon? The difference between coal and corn is that one is black carbon and the other is yellow carbon. Corn is the nearest to pure carbon of any food that we can get for the cow; it can be almost perfectly digested and assimilated, and it gives the most heating aliment for the vital forces. For every five pounds of this carbon, we want only one pound of protein on the other side by way of a balance to the ration. If we ask Prof. Shutt, he will say five pounds of carbhydrates and one pound of albuminoids makes a most nutritious ration for an animal such as a dairy cow. But some one may say to me, " What in thunder are carbhydrates?" Corn is nearly pure carbhydrates, as it is so nearly pure carbon. The cow that has fifty pounds of corn ensilage, has all the fuel she wants in the way of carbhydrates; give her a few pounds of oil cake, or meal—protein food—and that will make what we call a balanced ration. The question now arises, how are we to get this great crop of carbhydrates? A scientific man is one who has enquired into the data as to why things are so. Most of us look only to the surface. We dub a man "Professor," or term him a man of science, because he has looked into things a little deeper than we have. Now, let us look a little deeper into this subject

The corn plant is one of the best food rations for our cows. We get the most food value for our labor when we grow corn This being the case, I ask, do we intelligently understand the life history of the plant? Luck in farming, is trusting to moon signs, but skill in farming is comparing cause and effect and mastering details, and learning all we can regarding the business. It is essential that we should know the life history and the needs of the plant. How many of us here now think to get best results and the most out of it when raised, but that the corn plant of to-day is the same as that which grew in the garden of Eden? We learn, however, that the corn plant is a native weed of America, that its home is in Guatemala, where it grows to-day as of old. But some Indian or "early" traveller brought it north and introduced it into every state in the Union, and probably into Canada, for once there was no line or tariff. (Laughter and applause.) The corn plant has never been divorced from its tropical habits. It loves the warm summer weather and must have it to perfect its growth Wherever you find a corn plant growing in its perfection, you will find that it has been planted upon a freshly decaying sod, a highly developed soil with a fair degree of moisture, and in a region where there is 100 days of growing weather, a near approach to 93°. The corn cannot change its semi-tropical habits of growth; it always thrives upon the decaying remains of some other plant. But corn does not derive all its *food* elements from the soil. Fully 60 per cent. of the plant never came from the ground, but from the atmosphere, from the rain and sunshine, the dews and atmospheric gases, which gives it starch and sugar—for the starch and sugar come through the leaf and stalk, and not up through the roots—from the top and not from the bottom Never try to feed a plant starch, for starch never yet fed a crop through the soil. Nature feeds starch in at the top of the plant.

Give the corn plant plenty of room. If we crowd or shade it we are depriving it of a proper amount of sunshine, rain and dew, and by refusing nature a chance to perform its kindly offices you get only little, yellow, spindling specimens of corn plants. In such a case whose fault was it—nature's or the man's? In raising corn it is wise to get a variety that is naturally adapted to the locality. In this respect it is not prudent to try and improve upon nature. For instance, do not grow Virginia corn and expect to develop it into a good field of corn. Life is too short for that. Do not be ashamed of your native corn. Plant whatever variety will grow strongest, and will ripen before frost comes Five little stalks, with five little stubbins is not as good as one, with one large, well developed ear that weighs as much as the five others. The value of the corn depends upon the size, quality of stalk and maturity of the ear. If, by crowding the plant, you fail to have the ear matured, you deprive the stalk of its leading function and the crop of its success as a food ration. If I take a stalk of corn from the field, and take the ear off, putting the ear in one hand, and holding the stalk in the other, you will say that I have the most valuable part in the hand containing the ear. No, not exactly The ear is the other part of the plant condensed; but the best thing is to have the ears and the great lusty stalk combined. It is not profitable to divide the ears of corn from the stalk. I consider that at best it is a waste of time. I really have my doubts whether it pays to husk corn and grind it into meal. And all this work of preparation costs time and money, and has continued sources of loss in waste and indigestible substances.

We can grow more corn to the acre if we will study the habits of the plant more closely. I think it is a mistake to allow four stalks to grow in a hill, as that number will be almost certain to shade one another. and you cannot get the ears properly developed. If we plant our corn four feet apart and allow four stalks to grow in the hill we have a little over 10,000 plants to the acre, but if the corn is planted in drills

3½ feet apart, a plant each foot in the row, we have 14,000 plants on the same acre, and then each plant becomes a distinct individual, so to speak, and so gets its full share of the rain, dew, air and sunshine.

In planting corn a few years ago we used to drop the seed in holes, and put dirt on the top. We then left it, until when we went to weed it we could see where the cultivator went. (Laughter) Now we plant in rows, and do more early and rapid cultivating. When a kernel of corn is planted the roots run out a few inches, and then go down, down, sometimes reaching a depth of from three to five feet in good, mellow, clay soils. They are after water. The old fashioned way was to hill up, and try to get the plants to live on the moisture got there. But if you examine such hills you will notice that nature has sent out new roots. They run out about 2½ feet from the main hill of the plants. The tiny rootlets are only about two inches below the surface, and little branches or spondules run right to the surface, and in our wisdom we go cutting and cultivating regardless of this. The man who cultivates too closely does not see these little rootlets and they are bound to suffer. If there is a little dry spell nature cannot renew these roots if cut off. They must have rain and heat. There should be a temperature of 93° in order to get the best results. But we do not get that in Ohio, and you do not have it in Ontario. But by turning the sod under, and using plenty of green stable manure we are able to create a new condition of things which gives us a temperature of about 80° to 83°, or eight degrees more than is obtainable in old plowed land, and so is a closer approach to the tropical, or home life of the plant. The second set of roots that the corn plant sends out run, if undisturbed, closely beneath the surface for some four feet, sending out "feeders" in all directions. A peculiarity of this root is that if severed it does not recover from the mutilation, but sends out a sprangle of little rootlets, which, of course forces the plant to subsist in the little circle of territory bounded in by the cultivator marks ; and the most serious feature of the matter is, that if the weather is dry, the water supply of these plants is restricted correspondingly, and growth stops, and shortened growth means a shortened crop of grain, and no end of soft corn, which is only another name for a crop deficient in feeding nutrients.

Someone is ready to rise and tell me that we cannot cultivate corn without cutting off the roots. Now, what is the object of cultivating corn? Do we improve the corn by cultivating? The best corn that ever was grown on the Ohio Experimental Farm never was cultivated. We cultivate corn for the purpose of killing the weeds ; some appear to cultivate to kill the plant as well. (Laughter.) We should cultivate the corn before it is planted. What I mean is this: Make the ground very fine and mellow before the seed is put in. A good seed bed is most desirable ; but after planting leave the seed bed alone as much as possible. The best time to kill a weed is when it is germinating—when it is small, white and tender—and once disturbed its life is gone. Nature never repairs a broken weed. If you will examine the matter you will find that a weed seed—especially those that bother us in the corn—rarely ever comes up through more than two inches of soil, and if the weeds are killed in this strata of soil as fast as they germinate, we will soon be masters of the situation. If the soil is not disturbed at a greater depth, so as to bring seeds nearer to the surface, the mastery is gained, and then the future work is not to cultivate the corn, or kill weeds, but to keep a fine mulch of dirt on the surface to increase the ferment of the sod beneath, and check the evaporation of moisture. For then the great thing is to conserve the water in the soil for the use of the corn, and not let it escape through the air before it has first traversed the plant and been made the vehicle to carry plant, food and growth elements to the developing parts of our corn plant. Do not try to kill weeds by deep cultivation which is bringing seeds up to the surface to germinate that would never have bothered if left undisturbed. An old Scotchman, to whom I once appealed for advice, informed me that it was always a wise thing to "let a sleeping dog lie," and so it is about these weeds in the bottom of the furrows.

Then how shall we kill the weeds? Plant the corn at least two inches deep and, if possible, make the soil firm over it, which means a slight depression along the drill marks. Then before the corn is up drag the land with a light running harrow. When the corn is an inch high, drag again, but in the afternoon, as there is then little danger of breaking off the shoots, as they are much tougher than in the morning. If a light harrow with rather long teeth and backward slant is used, this harrow and a very shallow running cultivator can be alternated, and at the end of two weeks the cultivation is over so far as the weeds are concerned and all that is now required is to keep up mulch-making now and then by the finest, lightest possible stirring of the top inch of soil. The day that you feel that corn should be cultivated the old fashioned way, my advice would be that it would be rather more profitable to go fishing than to be cutting off corn roots. Remember that the roots which are the great feeders of the plant are within two and three inches of the surface, and from these millions—almost—of little rootlets extend, often filling the soil to the very meeting of air and soil, with little feeders that to the eye are like mould. As often as these are destroyed, nature must take a fresh stock of plant food to grow roots instead of stalk and corn, and if by chance there is little or no rain at the time, the corn plant stops growth, the leaves roll, and the lower leaves "fire," and our cultivation has worked us more damage than would the weeds. Use a light and rapidly working tool early in the season, and you will succeed with corn. But if you cultivate four inches deep you will kill nearly all of the upper layer of the roots of the corn, and will be more likely to perpetuate weeds through their seeds.

If you have no light harrow suitable, make a triangular harrow of three pine or hemlock planks, each 7 feet six in length, 2x6 inch stuff After making secure at the corners by "halving" them together with bolts or rough and clinch nails, put in 70 teeth in two rows, teeth four inches apart. Use 60-penny wire nails for teeth, and when driven in to the head give them a backward bend on an inch for slant. Draw this flatwise along the corn rows, and not with point of frame in front. Then two rows are dragged at once, and if alternated with a light running cultivator most perfect and rapid work can be performed. Such a harrow can be made in two hours, and the outlay for material need not cost over 60 cents. The different fashions of "weeders" with their long, vibrating teeth are excellent, and are coming into use rapidly, and with them corn can be "raked" until at least two feet in height, and promotes great economy of labor in cultivation.

But somebody says, "Without cultivation will you not have a crust on the ground?" Now, why do we break up the crust of the soil? Is it not simply to get moisture into it? Weeds do not do any particular harm in corn except for what they steal in water. But you will see that if there are as much of weeds as there is of corn half the water will be appropriated by the former. What we must aim after in raising corn is to keep the ground moist, and well stirred up with a light harrow, to keep the weeds killed, and not to cultivate the crop but simply to work in it. When the corn is six feet or so high it is useless to continue to work it, and it is better, I think, to sow rye, at the rate of two bushels per acre, broadcast among the corn, and with a shallow working cultivator work it into the soil with as little disturbance of the corn roots as possible. The rye will only make small growth at the best in the shade, takes up but little water, and as soon as the corn is off makes rapid growth, and soon affords a fine lot of fall pasturage for the small stock of the farm. What is more, it keeps the soil full of live matter through the winter, and so prevents leaching and washing away of a certain amount of plant food that is always escaping from fallow land. Thus in the spring one has a pretty fine field of rye sod to turn under, which is of great value as humus for a succeeding crop, and the most valuable thing about it is the fact that it has cost us but a trifle, and its effect upon the land in a mechanical way has paid us over and over again for the trifling outlay.

I think that our cultivators should be made over and do finer work. They ridge up the ground too much between the rows and dry out rather than conserve the moisture in the soil, and so the cultivator with a great many fine teeth made to run very shallow should be demanded of the makers. The average two-wheeled cultivator destroys more corn in a 20 acre lot than the value of the harrow. It is impossible to guage it so that it will be a perfect surface cultivator. It has been demonstrated that one inch is the proper depth for surface cultivation. I have discarded my modern cultivators, and have gone back to the old fashioned "grasshopper" cultivator, putting a wheel in front to keep it well out of the ground, and nailing a board two inches wide and half an inch thick and in length three inches shorter than the row is wide, on to the rear of the cultivator and crosswise of the row. If this narrow board is put on with a half pitch, and is set up about an inch above the lower point of the rear teeth, it will run slightly under the surface, and as all of the loose soil must go up over it as the cultivator is drawn forward, a most complete mellowing of the soil follows, and a complete killing of the few remaining weeds. Once through a row with this device attached equals three times by the ordinary way, and root cutting is wholly prevented, not to mention a great saving of labor.

To take up the discussion of the feeding value of the corn plant when grown, it is well to make some inquiry respecting it, and find out if we can how and in what way the food elements are distributed, and in what direction our attention should be directed in the main in its preservation and being made presentable to the cow, for in this comes our greatest returns, by the intelligent use of our brains. We grow the corn plant for the reason that it is our greatest, cheapest and best source of starch supply for the cow and, if we understand at the start that there are more food elements in the stalks than in the ears, and of almost similar character, then our concern is to put these stalks before the cow in such a presentable form that she can make them as easily available as in the form of cornmeal. We go to no end of expense to husk the corn and grind it into meal to make it presentable to the cow, and then because the fodder is more bulky, pitch it over the fence to the cattle to eat off the finest and most readily eaten portions; and by our want of understanding and neglect—possibly to save labor—waste more than half of the best half of our corn crop. Then we spend the rest of the winter telling that we did not have good luck with our fodder, that it did not spend as well as it did some years

There is but little difference between the feeding value of the stalk and of the ear, the balance being in favor of the former. There is very little nutriment in the leaves, however. If you have an acre of corn a little on the green or immature side and cut it, you will get say 2,000 pounds of feeding value from it, but if you let the crop stand a little longer it will give you a feeding value of 2,600 pounds. Study when to cut your silo corn, for you must have the stalk in such a condition that the cattle will eat it.

To-day I am not required to make a defence of the silo. There is not a rational dairyman who does not now recognize the essential value of the silo. But the important and practical question arises, where to have the silo, and when and how to fill it. Let me say just here that if a man does not want to be better off he had better not fool with a silo The man who has a silo saves his corn in a more economical way than by any other plan, as he maintains its food value and gives it to his cows in a most appetizing form. You cannot get out of the silo what you have not put into it. But look at the old way of preserving corn, and see the difference. No man can afford to sacrifice 37 per cent. of the feeding value of his corn, and this, as the Pennsylvania Experiment Station has shown, is the loss by the more common way of feeding corn and fodder in winter. Do you know of any other business that can waste so much and keep out of bankruptcy? We farmers too often are content to get enough to go through the winter, like a woodchuck, come out in the spring, and go through the same thing the following year. (Laughter.) What has the average farmer to show for the food given his cows during the winter? How many of the animals are giving any milk at that time of the year? Where has the winter food gone? Yes, and where has the food gone that you will feed to the steer that will weigh 50 pounds less in April than he did in the previous November? (Laughter and applause.) Where has the food gone that you have fed to that spavined horse that will not be worth fifty cents more in the spring? And what is the value of the food given to that pig that will go through the same hole in April that it squeezed through in the previous November? (Laughter.) It will pay you to give these animals away, and keep the food in the barn, or else give it to the poor and needy. Why do we not save our food materials as carefully as the manufacturer saves his? Let us put that food into milk that will give us butter all through the winter and pay us for the feeding, and then we will be solid and solvent in the spring. (Applause.)

The silo should be built of sound lumber. Build it round or square or any other shape, so long as it is air tight Make it of two thicknesses of good lumber, lined with tar paper. I prefer the best flooring, free of knots, and put up by an experienced maker. Any man who can nail a board without hitting his thumb three times will do to help. I believe that the day of the stone silo is gone, and also the day of the stone foundation. I would never have stone in connection with my silo. For foundation build a trench ten inches deep, and put in a stick of timber well tarred; put in some cement around it, and that will give you as good service as a stone foundation costing $50. My timber foundation is just as sound as it was six years ago, and is doing as good work as my stone foundation. I built the first wooden silo east of the Alleghany mountains, and it was only by the skin of my teeth that I escaped being sent to the lunatic asylum by my kind and sympathetic neighbors. That silo has been filled nine times, and we have never had a board taken off, nor has it cost anything for repairs.

A MEMBER: What about the corners?

Mr. GOULD: The inside corner of the silo is just as safe as along the walls. I find that silos with acute or right angles are just as easily filled as any, and there does not seem to be any more waste. Trouble in moulding in corners and sides is caused by too much tramping, and it dries out and moulds. Since I have abandoned tramping my silage and merely keep it level, this trouble has disappeared.

Now, as to how the silo should be filled. I formerly had sixteen men to do the work, but last year I only had six, and these six men did more work than the sixteen used to do. They are never in each other's way; and then, you know, among twenty men there are always sure to be three professional story tellers. (Laughter.) I have flung aside all the machinery for cutting the standing corn, and now have the crop hand-cut. I get it cut for about 80 cents an acre and the board of one man. A corn harvester costs $130, and will not last more than eight years, and $18 interest on money and wear of the machine yearly, will cut my corn by hand twice over each year. A man cutting by hand can take three rows at a time, and a good man can cut three acres a day, if he works alone. Never allow corn when cut to be dropped into the furrows. Let it be put crosswise of the rows, so that the man who comes along to take it up can do so without using his fingernails for a rake. In picking up the corn we do not use a low wagon, but an ordinary high one, and one man loads and unloads his own wagon. We have four men in the field: the cutter, a loader, and two "pick-me-up's." A great deal depends upon careful loading. Get the driver to load his wagon seven bundles high, and keep it there until the wagon is loaded. Formerly in operating the cutting machine, we had two men to feed it and one man to boss the job. Now we have one man to feed the machine and no one to boss him. He must simply keep feeding the machine or get buried. (Laughter.) We used to put two men in the silo when filling, now we find one man can attend to that part of the work, look after the engine and do odd jobs. A load of corn weighs more than a man, and that is why we do not do any tramping now. In filling a silo you should always aim to keep the highest portion near the walls. We place a sort of table or small platform over the centre of the silo, run the ensilage on to it, making a pyramid, then the corn must fall towards the walls, and not to the centre. Now and then it may take five minutes' work with the fork to make things even, and level up. Do not cover your silo. Ten pails of water evenly distributed over the top when the corn is all in and the top well tramped, is best of all. Then come away, and put your trust in Providence. The moisture on the top of the silo will quickly develop a fine mould, which is better than anything else by way of preserving that which is beneath. You will lose only about 10 bushels of ensilage by the moulding, and that costs less than would a day's work making an artificial covering. I trust these hints may be of assistance to you, and that your experience with the silo may be such as to encourage those of us who have been endeavoring to encourage you. (Applause.)

INSTRUCTING IN CHEESE-MAKING.

Mr. W. W. GRANT read the following paper: The opportunities, afforded to an instructor by visiting a different factory every day, well equips him for giving useful hints and suggestions to even the best cheese-makers.

If he is observant, he is in a good position to note the condition of the industry generally, and by making his observations known at these, our annual meetings, something may be suggested which if acted upon good may come out of. At present cheese-makers have splendid opportunities for receiving instruction in cheese-making at our different dairy schools. In many cases young men who are learning the business have not the privilege of attending these schools; too many of them cannot afford it. In some sections at the present time, there is a good deal of instruction needed yet. Last June I received a communication from Mr. A. A. Ayer, of Montreal, urging me, if possible, to visit the section of North Hastings, but owing to the fact that I had at that time so much work to do it was impossible to go.

I am satisfied that in many cases my work has been well received, but when a man is engaged in inspecting milk and has only one day at a factory, if he has any trouble he cannot devote as much time as he would like to instructing. From my experience last season I am satisfied that there is yet plenty of work to be done by travelling instructors.

As I have previously stated, the dairy schools are doing a grand work and are particularly helpful to makers who have had a few years' experience, but a young man who has not had any experience before attending a dairy school is hardly qualified to manage a factory. He may fall easily into some wrong method of treatment without discovering his mistake until a great deal of damage and loss have been sustained.

The following burlesque on "The Young Dairy Graduate at Squedunk," may help to illustrate the case: A young, ambitious maker of cheese and butter, receives his lithographed diploma, with his heart all in a flutter, and though as blind as Homer to the trials he must meet, feels his heart proudly beat, as he contemplates a fancied amber hued career, and he seeks a situation with no particle of fear.

He is young and very green, but is stylish and serene. He believes himself as wise as Solomon of old, and imagines that his brain is worth a mine of gold. He would fearlessly engage a large factory to manage. His thermometer of self conceit marks several hundred in the shade.

A factoryman from a newly developed dairy district in due time came along seeking a maker of renown willing to do his making for a song He meets the young and stylish maker, talks to him with the oiliness of butter, and listens open-mouthed to the young man's flow of eloquence, and finally expresses a desire to know if he will condescend to do his making for say $25 per month and board. The young man blushes, hems, haws and stutters, and then crushes the factoryman by accepting with a lordly air the salary proposed, remarking that he does not wish to have it generally known that he has shown such regard of what is due to him as to accept for his services dollars too few for him. The factoryman and the young man take the train for Squedunk and contrive to make the journey pleasant for each other by a mutual exchange of blowing. One is extremely liberal and considerate, the other very great and knowing. One expatiates upon the great attractions of his growing township, the other overwhelms him with a tidal wave of deep sartorial lore.

They arrive at Squedunk in due time, where they take a conveyance out to the factory, a distance of several miles. The young man takes in everything as they drive along,. It being in the early spring the farmers have already turned bovines out. The young man inquires what is the principal breed in the district; he is informed none in particular, but that all have good points, which is the conclusion the young man has already come to; mentally ejaculating that he could hang his hat on them most anywhere. At last they arrive, hungry, sleepy, dusty and tired. After a quiet night's rest our hero is introduced to the factory, which he finds requires considerable cleaning up, but he bravely goes to work. In a day or so he is engaged in converting that mysterious lacteal fluid into cheese. Everything appears to run along very nicely, and the first shipment is finally sent out subject to inspection at the front. In about a week he receives word that the quality of his cheese is not first-class, consequently a reduction of ½ cent per lb. is taken; the buyer states his cheese are too firm, he has given his curd too much acid for spring cheese. Our maker is somewhat staggered by this, but is determined to not give up; he resolves in the future to dip sweeter and everything runs along smoothly for a few weeks. Then a hot spell of weather comes, and the thermometer now seems almost too short to accommodate the mercury within it, and the maker finds his cheese begin to puff, and he is in a sore dilemma. He knew enough to wait, thinking they might come down again when the weather got cool. One day the curd worked slow; apparently the acid would not develop, and our maker could not think what the matter was. He worked it in every possible manner he could think of; when preparing to mill it he cut a piece open and behold it was full of small holes. "Well I'll be darn'd," he says; "its gassy. Now with all the lecturing I have heard on gassy curds I did not know one when I saw it." He makes up his mind that the patrons need a lecture on the care of milk, and they get it every morning. But it seems no use; his curds are always gassy, and he cannot get done work till late in the evening every day. The report on his second shipment is anything but favorable. He feels, indeed, that he has struck a streak of adamantine luck, and thinks that the milk in this section is different from that he has heard of anywhere else. He asks the boss if the previous maker had any trouble, and is informed he had some, but to keep on and do his best and he will maybe come out all right.

He thinks it is not so easy to make cheese as he thought it was. "Perhaps I blowed too much; the boss thought I was a 'corker'; no doubt I did. I never hid my light under a bushel, but I'll talk less hereafter. I am not too old to learn; but by jingo, the day will be quite cold when I get completely left." He goes over his notes, and studies all the bulletins on making he can procure, but it seems he cannot get his curds to work right. Every day the gas seems to get worse, and he knows the yield must be bad because a great deal of grease presses out of his cheese, and on every shipment there was a loss, and he sees that if it keeps on this way he is going to make no money. Finally he tells the boss that he is going to leave Squedunk, so he goes back home. He does not think he knows so much as he formerly did, and never blows. His finances are rather low, but he would rather do most anything than undertake to make cheese again.

Prof. Robertson, then gave an address upon "First Principles of Agriculture," which was similar in substance to his addresses delivered at the conventions of the Western Dairymen's and Creameries Associations, the reports of which follow in this volume.

SHORT TALKS BY WESTERN MEN.

Mr. N. Awrey, M.P.P.: Although a western man I am anxious to see the success of this Eastern Association. As I said yesterday, the farmers and cheese-makers of this country have always been very friendly to me. As one of the Board of the Agriculture and Arts Association, I may say that that organization has asked that an appropriation of a few hundred dollars be made by the Government towards encouraging the holding of a dairy exhibition in the eastern part of the province to compensate you for the holding of the fat stock show in the west. What the Government will do, I cannot say, but I do trust the Legislature will back them up, and I have no doubt that the Minister of Agriculture will do what he can to have this matter put through. I may say that Hon Mr. Dryden is continually looking after the agricultural interests of the province, and if he can find any way to have something done for you he will get it done. He is a Cabinet Minister who lets his colleagues know that his Department is an important one. He has got more and done more for the agricultural industry than any other man who has held the same office. You in the east are doing more than the people of any other part of the province in the direction of making butter and cheese. A few years ago we in the west thought of you as living in a rather hard part of the province, but now we look upon you as living in a progressive, profitable and hospitable region. You are bringing in more to enrich yourselves than perhaps any other section of Ontario. Our soil in the west is perhaps more fertile; we may grow more fruit and grain; but, as I have said, you are doing more, in this great line of dairying, to bring money into the province, than we are. Dairying must be the great industry of this part of the country, for we cannot compete in grain growing with the people of Russia, India, and some other countries You have made a success of cheese-making; why cannot you make a success of butter-making also? To-day Denmark furnishes the greater part of the butter imported into Great Britain. There is no reason why, with our fertile soil and our splendid water supply, we cannot from the same great market bring in annually millions of dollars as well as little Denmark. I would advise you to manufacture your butter by co-operation, as you do your cheese. You make the best cheese in the world; and you ought to make just as good butter as they do in Denmark or any other country. Make your cows earn their living in the winter time. Too many farmers, more especially in the western part of the province, allow the cows to put into their winter keep the profits of the summer. If you make good butter the people in the old land will purchase it, but they do not want an inferior article. It is too true that the reputation of our butter is bad in the old country, although I think it is not the fault of the farmers so much as of the merchants and dealers. They take our butter, mix good, bad and indifferent together, and put it in one firkin. This should not be. I remember a man who decided that he would get the best buttter he could and ship it to England. What did the broker say? "If you will name that something else than Canadian butter I can sell it; but if you will not change the name and will still call it Canadian butter, I must sell it for the price of axle-grease." Now, if you will here in the east only do for butter what you have done for cheese, you will establish a reputation as the most progressive portion of the agricultural population of the Province of Ontario.

Mr. PATTULLO: I will say only a few words this morning. I trust you will follow up my suggestion of last night by sending a delegation to the Good Roads Convention in February. We want the good roads question to be solved by conventions and agitation, just as the dairy question is being solved by you in this and kindred gatherings. I desire to heartily compliment you upon your success. Hon. George Brown thirty years ago told us that Oxford was the garden of Canada, but it would seem as if the garden of Canada has moved east. We also thought that we had the original "first cheese factory," and that we were the home of the cheese industry. But down in the Province of Quebec they show us the photograph of the first cheese factory erected in Canada, which they claim is the genuine original. Then Senator Read, of the Belleville district, says he built the first Canadian cheese factory; while to cap all Mr. Derbyshire says that in the county of Leeds the real old and original first cheese factory in Canada was built. (Laughter and applause.) But we of Oxford are going back to a still earlier one, for we found that before the days of Harvey Farrington, an old lady, now nearly 100 years of age, ran a factory in our county—yes, years before any of the others named. (Applause and laughter.) I think you have had a splendid convention; but, after all, how small a percentage of the dairymen of this part of the province you have had. How are you going to get these less progressive fellows on the back concessions, who have not energy enough or interest enough or means enough to come to these conventions? That is the problem our Western Dairymen's Association has tried to solve through local conventions, by annual meetings of factory patrons and through the press. Get your young men together, and form little dairy clubs in connection with every factory, where you can come together at least once a month in winter. Get together and compare notes and exchange your experiences, and in that way you advanced men will be able to spread the gospel of good dairying.

Hon. JOHN DRYDEN was enthusiastically received upon rising to make a few closing remarks: Mr. Awrey has said some kind things about me, and among other things he remarked that the Minister of Agriculture was a man who had special thought for the interests of the farmers. Well, while that may be so I have never forgotten that I have other interests at heart. In my own constituency I have the very progressive manufacturing town of Oshawa, and I am proud to be able to say that I represent manufacturing interests as well as agricultural interests. I never want to see these interests separated. If the proposition of the Agriculture and Arts Association comes before me I must consider it from the standpoint of what is best for the people of the country generally. (Applause.) I have been much interested in Mr. Gould's address upon the cow. I do not think our Dairy Associations can do better than to procure the services of men like Mr. Gould who can make speeches at once so practical and so eloquent. We have been sending out instructors to show how butter and cheese should be made, but you cannot make butter and cheese without the right kind of a cow, and the right kind of food and care for it. The great trouble with most men to-day is that they do not have a sufficiently intelligent idea of what they ought to do. We want dairy cattle for the production of milk. I had a Scotchman living near me twenty years ago, and he said he didn't care a button whether his cow was a Jersey, an Ayrshire, a Shorthorn or an old Canadian, so long as she could fill the pail. He said that we had in the common Canadian cow an animal that would make a first class breed of dairy cattle if properly crossed and selected. But the man who would grade up such dairy cattle must have a definite ideal. I desire to make just one more point. We have had the pleasure of listening to valuable addresses here, but after all only a few hundreds have been able to hear this instruction. We want this information to be spread among the people. When I entered my department, I decided upon a plan of work which has involved a good deal of labor. I determined to send the reports of these gatherings, not only to members of Dairymen's Associations, but to the farmer's institutes, and to the other agricultural associations. I am having this agricultural information sent to all parts of the country. This is why we have a stenographer here, who is taking down the words spoken, so that they may be printed and given a larger circulation. The spoken word reaches only a few; but the printed word will be finding thousands. By continual instruction, by showing the people what has been, and can be accomplished in the more excellent ways of dairying, we will reach a stage of progress that will make this country one of best in the world. I will say in conclusion that I shall always remember with a great deal of pleasure my visit to Gananoque.

Mr. J. W. Wheaton, Secretary of the Western Dairymen's Association, was next ntroduced, and said he was always glad to meet dairymen, for they were a class who appeared to have a brotherly feeling towards one another. The dairyman belongs to a great fraternal society whose password is "The Cow." The great question now before them was how to make the most out of the cow. I do not think that we as dairymen fully understand the possibilities of the dairy. We have to go further still before we can find that out fully. We are learning more and more about her, and the conditions required to make money out of her, but we must study more closely the care of this animal. I am glad that more attention is being given to this feature of dairying at meetings of this kind. There is an immense amount of money lost through neglect of cows. But after all, meetings of this kind are of value and benefit only as we utilize the ideas presented, and put into practice the hints and instructions given by the various speakers who address us. Sometimes you feel that you cannot adopt them, or adapt them, but have you ever tried them? We generally resolve too much and put too little into practice. I am glad to learn that dairying is progressing here. I was at a splendid local gathering at Mallorytown last night, in this eastern part of the province, and found that the farmers were particularly interested in dairying; we had a great time there. I extend to you a hearty invitation to our forthcoming convention at Stratford, and I am glad that we are mutually desirous of improving dairy conditions both east and west.

AUDITORS' REPORT.

The Auditors' Report was then presented by Mr. Morden Bird, showing the receipts to be $5.978.56 and the expenditure $5,599 35, leaving a balance on hand of $379.21. Upon motion of Mr. Bird, seconded by Mr. Dargavel, the report was adopted.

The detailed financial statement will be found in the Appendix.

VOTES OF THANKS.

Hearty votes of thanks were passed to the citizens of Gananoque, for their hospitality, and also to the press and to the railway companies for courtesies, after which the convention was dissolved.

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

OFFICERS FOR 1895.

President,	Andrew Pattullo, Woodstock.
1st Vice-President	A. F. McLaren, Toronto.
2nd Vice-President	Harold Eagle, Attercliffe Station.
Directors :	
Division No. 7	John Prain, Harriston.
Division No. 8	J. N. Paget, Canboro'.
Division No 9	J. F. Williams, Ingersoll.
Division No. 10	George Robertson, Lucknow.
Division No. 11	Thomas Ballantyne, Stratford.
Division No. 12	J. S. Pearce, London.
Division No. 13	Harry White, Hawkesville.
Honorary Secretary	C. E. Chadwick, Ingersoll.
Secretary-Treasurer	J. W. Wheaton, London.
Inspector and Instructor	T. B. Millar, London.
Auditors	J. C. Hegler, Ingersoll. J. A. Nelles, London.
Representative, Industrial Exposition, Toronto,	J. W. Wheaton, London.
Representatives, Western Fair, London,	J. S. Pearce, London. John Gilmour, Dorchester.
Representatives, Central Farmers' Institute, Toronto,	Thos. Ballantyne, Stratford. J. A. James, Nilestown.
Representatives, Good Roads' Association,	L. R. Richardson, Strathroy. J. H. Wooley, Simcoe.

EIGHTEENTH ANNUAL CONVENTION

OF THE

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

To the Honorable the Minister of Agriculture :

Sir, —I have the honor to submit herewith the Eighteenth Annual Report of the operations of the Dairymen's Association of Western Ontario.

Dairying still continues to be the most important branch of agriculture in this part of the province. The demand for information regarding the organization and building of cheese and butter factories has largely increased. Many sections where heretofore there have been no cheese nor butter factories running are taking hold of the matter, and it is estimated that the number of factories in Western Ontario will be increased by twenty-five during the incoming season. This means an increased production of cheese, a larger cash return for distribution among the agricultural classes, and an increased prosperity for the farmers. This extension of the cheese factory system may mean to many an overproduction which will lessen the profits. True, there is a possibility. It must be noted, however, that, taking the whole province, the number of cows in it cannot be increased very materially for three or four years at least. This extension, for the present, therefore, means that the milk of a large number of cows, which was formerly used in the home dairies and on the farms will be supplied to the factories and made into cheese.

The season of 1894, owing to the severe drouth of July and August, was not a very favorable one for the production of milk. Many factories had to close early in the season, as the supply was not sufficient to pay the cost of manufacturing. The exceedingly fine fall, however, helped to equalize matters, and where factories were able to continue making till the end of the season a good average make was obtained. The prices obtained for cheese were good,—on an average, somewhat higher than in 1893. The effects of the drouth were not so serious in those sections where the farmers make a business of dairying, as more soilage crops are grown for summer feeding.

Included in the report for 1894 are somewhat lengthy and minute accounts of the Directors', Secretary's and Inspectors' work, which, together with the annual address of the President, give in detail the operations of the Association during the year, and the progress of dairying in western Ontario during the same period. They show that the manufacturing of winter butter in our cheese factories is increasing, that the butter-fat system of paying for milk for cheese-making has obtained a firm hold among the patrons of our cheese factories, that the number of prosecutions of patrons for skimming or watering milk supplied to our factories is decreasing, and that the instructions to makers given at the dairy schools and by the Association are affecting an improvement in the quality of the cheese produced. They also show that the Association, as heretofore, has been active in looking after the interests of the industry under its charge. Effective work has been done along the line of educating the farmers in the best methods of dairy farming and in caring for milk for cheese-making, by means of the numerous district conventions and local meetings held under the auspices of the Association.

The Association held its Eighteenth Annual Convention in the city of Stratford on January 15th, 16th and 17th, 1895 The average attendance was larger than that of any previous convention The addresses delivered were practical, covering nearly every phase of dairying. An accurate report of these addresses is included herewith.

Your Department merits again the sincere thanks of the directors and members for its continued recognition of the Association's good work by making a liberal grant to meet the heavy expenditure which such work must entail. In anticipation of your continued good favor, it will be the aim of the directors of the Association to expend, as heretofore, all future grants in the best interests of dairying in western Ontario.

All of which is respectfully submitted.

Your obedient servant,

J. W. WHEATON,
Secretary

LONDON, Ont., March 25th, 1895.

EIGHTEENTH ANNUAL CONVENTION

OF THE

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

The eighteenth annual convention of the Association was held in the City Hall, Stratford, on January 15th, 16th and 17th, 1895. The attendance was very large, and the interest in all the discussions well sustained. The convention was spoken of by many who attended as the most successful dairymen's convention ever held in Ontario.

MR. ANDREW PATTULLO, President, called the meeting to order, and in the temporary absence of the Secretary upon business of the association, called upon Mr. J. S. Pearce, second Vice-President, to present the report of the Directors.

DIRECTORS' REPORT.

To the Members of the Dairymen's Association of Western Ontario:

GENTLEMEN,—Your directors beg leave to make the following formal report on the operations of the Association during the past year:

As you are aware, we have had for two years past asecretary who devotes all his time to the work of the Association. This work has increased greatly in these recent years and is now of a very varied character. In addition to the ordinary routine of his office, the secretary devotes a large amount of time to attending the annual meetings of cheese factories and other gatherings of farmers, for the purpose of discussing questions connected with the dairy, and where the interests and work of the Association may be promoted. We are glad to be able to report that the interest in our work seems to be greatly on the increase. There is a more general desire among the patrons of the factories for information and help, and a more wide-spread disposition to put into practice the best teachings of progressive dairying. Through such meetings, and other means used to increase the popularity and usefulness of your association, your membership has increased greatly—indeed, about four fold, although it is still very much less than it should be, considering the great work which our organization is doing, and the number of dairymen throughout the half of the province which is covered by its operations. We are glad to note that the secretary's office is becoming more and more a centre or head quarters for the dairy interest. It is a most useful agency for the dissemination of information. It is a medium of communication between all classes connected directly or indirectly with our great cheese-making industry. In this respect it is helpful to buyers, salesmen, factory directors, makers and patrons alike, and to the general public outside the area of the trade.

Among the new lines of work recently inaugurated has been the holding of local conventions or district meetings of dairymen. These meetings have been almost as successful, and in some cases as large, as the annual conventions of our Association; and they have produced, we believe, most satisfactory results, especially in the districts where dairying is comparatively new. During the month of March in the past year five of these local gatherings were held at the following places: Dunnville, Shelburne, Wingham, Watford and Harrow. Your directors were able to secure a good staff of speakers for all these meetings; and from the reports received we feel warranted in making arrangements—which are now under consideration—for similar meetings during the coming month. A letter received from a prominent dairyman in one of the sections where such a meeting was held asks for another one this winter. The writer says: "It would be difficult to estimate the good effected by the last one. Our patronage increased a great deal as the result of it last season."

Your directors considered it advisable this year to discontinue the work at the Tavistock Dairy School and the grant to the same, under the belief that the excellent work formerly done there is now being accomplished by the Provincial Dairy School at Guelph, and by the special instruction which the inspector of the association now gives. Arrangements were made for our instructor, Mr. T. B. Millar, to begin the season's work by spending a few days at each of about twenty-five factories—which we selected so as to cover the various dairy districts throughout western Ontario. The wisdom of this arrangement is evident from the extent to which neighboring makers took advantage of Mr. Miller's presence, and met him for the purpose of conference and instruction. From all the reports received the results of this special tour of instruction in April and May have been most beneficial. Your directors have re-engaged Mr Miller for the present year, his duties to begin on the first of April and to continue until the first of January.

During the past year a complete set of the annual reports of this Association, since its inception in 1867, has been purchased from Mr. C. E. Chadwick, your honorary Secretary, and a former president. These reports are preserved and on file in the Association's office, where they may be seen by any member. We consider ourselves fortunate in having been able to secure this valuable record of the early history of the Association's work and the inception and progress of co-operative dairying in Canada.

As you are aware, the work of promoting the cheese-making interests of the province is carried on by this and the Eastern Dairymen's Association, while the butter-making interests are specially in charge of the Ontario Creameries Association, which covers the whole province Your directors, recognizing the fact that the work of these bodies is running year by year more closely along the same lines, and that the progress of winter dairying has made the work of the different associations more nearly of the same character, resolved to make an effort to bring about a re-union into two bodies of the cheese and butter-making interests as represented now by these three associations. Accordingly at a meeting of your board the following resolutions were passed unanimously :

Moved by Mr. Geary, seconded by Mr. Dickson, That the Directors of the Western Dairymen's Association, recognizing the fact that the work done by the Dairymen's Association of Eastern and Western Ontario and the Provincial Creameries Association is every year running more and more along the same lines—especially since the introduction of winter butter-making into the cheese factories—are of the opinion that the dairy interests of the province would be promoted by a re-union of the Creameries Association with the two Dairymen's Associations, inasmuch as such union would give increased strength and funds for the carrying on of the work which is now being done by these three bodies In order to carry out what we believe would be a beneficial re-union and amalgamation of interests, we hereby request the Directors of the Eastern Dairymen's Association and the Creameries Association to appoint a committee to meet with a similar committee from this association, to consider the question of such union and to confer with the Provincial Minister of Agriculture on the subject, such committee of this Association to be composed of the President, Hon. Thos. Ballantyne and ex-President Geary. And the Secretary is hereby instructed to send a copy of this resolution to the presidents and secretaries of the two other associations associations referred to, and to invite them to make arrangements for a joint conference at as early a date as possible.

Copies of this resolution were sent to the presidents and secretaries of each of the other two associations ; and your president waited personally on the directors of the Ontario Creameries Association to explain the objects of this board. But we have been informed that the said Association has not thought it advisable to take any action in the direction of union.

In March last the presidents and secretaries of the various cheese boards in western Ontario and a number of prominent buyers met at the secretary's office to discuss the rules and regulations governing the buying and selling of cheese. Resolutions were adopted to the effect that the "call" system should be maintained, and that it would be in the interests especially of the producers of cheese if all the members of such markets would buy and sell only on the boards. Other matters connected with the trade were also discussed, and, with these resolutions, have since, we believe, come before the local organizations.

The annual grant to the Western Fair at London was continued last year, but no grant was made to the Industrial Fair. We are able to state that this grant, which it is necessary for us to give to some exhibition,, is productive of good results and that the Dairy Department of the Western Fair is deserving of credit for the large and well managed exhibit of dairy products which was seen there. The managers of the Industrial Exhibition have during the past year greatly improved their facilities for the exhibition of dairy products and are anxious to secure the patronage and assistance of your Association, which is a matter of importance for consideration this year.

Your directors are pleased to be able to report that through the influence of these conventions, and the efforts made in other ways by this Association, the system of paying for milk according to quality, as shown in butter-fat by the Babcock tester, has been very generally adopted, although it is still much too far from having become universal. But recent experiments and discussion on the subject suggest that the last word has not yet been said on the subject. Your directors believe that there are few things which can engage your attention of greater importance to the interests of the dairy industry than the abandonment of the old, unfair, dishonest and vicious system of pooling milk and paying by weight, and the universal adoption of the fair and honest system of paying for milk according to quality. In view of the importance of the question, we have taken steps to make it a leading topic for consideration at this convention, as it has been at all your conventions for several years past.

Your directors regret to chronicle the fact that the Association and the dairymen of Canada have sustained a severe loss in the death during the present year of Mr. H. S. Losee, of Woodstock, one of the earliest and most progressive of the pioneer dairymen of this country. Mr. Losee was formerly an active and useful member of this Association ; and few men did so much in the early history of the cheese industry to promote its advancement. His factory in Norwich was for many years what might be called one of the early schools of dairying. where many men, afterwards prominent, obtained valuable lessons and the inspiration which led to their success in life and to the growth and success of cheese-making throughout the province. Your directors express the hope that this convention will place on record its appreciation of the great services rendered to the Association and to Canada by our deceased friend, just as our past records afford testimony of the estimate which his co-workers in the early days of the industry held of him.

While the funds at the disposal of your board are limited, they have been found, under careful and economical management, sufficient to meet the necessary expenses of the Association, while a balance remains in the treasury of $335.10. We have endeavored to expend them with due regard to economy, efficiency and the vigorous carrying on of what we regard as important and necessary work ; and we trust that our efforts in this and in other directions will meet with your approval.

Fuller information as to the work of the board and its officers during the year just closed you will receive in the reports of the secretary, the inspector and the auditors of this Association.

All of which is respectfully submitted.

Andrew Pattullo,
President.

J. W. Wheaton,
Secretary.

THE PRESIDENT'S ADDRESS.

The President, in moving the adoption of the report, delivered his annual address : He began by referring to details of the work of the Association during the past year, as set forth in the reports of the directors, the Secretary, the auditors and other officers. He thought it could be fairly claimed that much of the prosperity of the dairy industry of the province and throughout Canada was due to the work of the Western Dairymen's Association and similar bodies. The extension and extraordinary success of cheese-making would not have been possible without such organized efforts. This and kindred bodies are business organizations for the promotion of the business interests and the development of the dairy industry. But they are much more than this. Along with the dairy schools and the departmental and experimental agencies of government, they are in reality schools of agriculture, which now form a part of the educational work of the country, second only in importance to our public school system. In holding such con ventions as this, by local meetings throughout the various districts of the west, in assistance by way of discussion and technical information given at the annual meetings of cheese factories and other gatherings of farmers everywhere, in the dissemination of the results of experience and of scientific investigation, in reports and bulletins, by official correspondence, through the use of the press, and by special instruction and inspection this Association is really carrying on a great and beneficent educational work—a work which has produced far-reaching results, and which is capable of still further and more useful extension Perhaps few people outside of those directly connected with this work realize either its value, its magnitude or the results achieved. Some idea of the great material interests committed to the charge of this Association may be gathered from the fact that the annual output of cheese in the district represented by it is, in round numbers, four million dollars annually. Of the greater value of the educational work it is not possible to produce such tangible evidence.

But in spite of its former growth to enormous proportions, during the past year there has been, if not a rapid, at least a steady and healthy, expansion of the cheese-making industry in western Ontario, as well as in many other parts of Canada. This extension is seen not only in the erection of new factories, but also in the number of patrons at the older factories, and in the average number of cows kept by each; also, I believe, in the average results achieved. The growth of the dairy is further evidenced in the progress of winter butter-making in connection with cheese. While the conversion of cheese factories into winter creameries has not gone on as rapidly as anticipated, still some progress has been made in a direction from which good, if not extraordinary, results may be expected. It is just possible that the unusual interest—not quite yet a craze—excited in this and other countries by the success of our dairymen may lead to the expansion of the industry to the point of danger; and that from influences already in motion here and elsewhere we may see a marked fall in the price of cheese as in other products of the farm—a contingency which our dairymen should not lose sight of. However this may be, it is clear that all our efforts, especially all governmental efforts, should now be directed to raising the standard of quality, to the holding and improvement of the position we already have in the markets of the world, rather than to the extension of the area of cheese-making operations. In butter-making there seems to be an unlimited field for the production of a gilt-edged article. While the foreign markets just now offer little stimulus to the development of this branch of the dairy industry, it is gratifying to note that the improved taste of the Canadian people has recently given a great impetus to the production of good butter, either home dairy or creamery, for the local markets. The clear demands of the home trade are an intimation to makers that the day for poor butter at a profit is past. But here is a fact which should not be forgotten. In spite of individual, co-operative and departmental effort—and the power of the press—during the past few years, the shipments of butter from Montreal in 1894 were less than one-third of what they were in 1892, and less than a sixth of those in 1880. During the first period the shipments of cheese rose nearly 80,000 boxes; during the second or longer period they increased considerably more than three fold. But this startling fact should not discourage us in the production of good butter, or in the extension of winter creameries. It merely illustrates a fact which we should never lose sight of in this or in any other industry—that the Canadian trade is not entirely dependent on our own efforts. We are affected by the efforts and the success of dairymen in other parts of the world, whose product meets ours in the common market The condition of both the cheese and butter-making industries suggests that every possible effort on the part of the trade and of government may be beneficially exerted to increase facilities for the quick and cheaper transportation of our goods to the British market, and to the enhancing of their reputation there. The problem of handling our butter and placing it fresh and in perfect condition in that market is clearly not yet solved. This problem is one which affects the cheese industry. in these days of winter creameries, as well as those engaged exclusively in the production of butter.

As you are aware, the product of the great cheese-making district covered by the operations of this Association is known in the markets of the world as "Ingersoll cheese" It is a term honorably associated with the early history and the growth of co-operative cheese-making in Canada; and it stands now, as it has done for a generation past, for pre-eminence. While the superior quality and reputation of "Ingersoll" cannot be successfully challenged, the efforts of other sections and countries to improve, and to reach our high standard of excellence should never be lost sight of for a moment by this Association and those it represents. There never was a time in the history of the trade when it was more necessary to be alive to the feverish spirit of competition abroad, and to guard the position which we hold against all who, by honest endeavor or otherwise, seek to equal us in the English market. I believe that in acting in this spirit of self preservation, the retention of the word "Ingersoll" is not only prudent but essential. It stands, and has long stood, for superior quality in the markets of the world—and has, therefore, a commercial value in itself. The reputation, the value of that name, was secured by honest effort; and the famé of Ingersoll cheese can by the same means be still farther advanced. It is gratifying to know from buyers that the cheese of this district was never of better quality than during the past year. If by your apathy to your own interests it should ever unfortunately come about that the term shall not stand for quality and a preference for our goods against others in the common market, the dairymen of this district will sustain severe loss. But I have no fear that you will allow any influences to take from you the leading position which you have fairly won. The meetings of this Association, and scores of others throughout the Ingersoll district in recent years, are evidence of a new spirit of progress and an increased determination to lead the continent, if not the world, in the production of good cheese.

Looking back over the past year, it will be conceded that it was a fairly prosperous one. Prices were good and the output, in spite of an unusually severe and long continued drouth, about the average of a fair season in most sections. The high prices early in the season, followed by this almost unparalleled dry weather, excited expectations on the part of salesmen which were scarcely realized for fall cheese. The lesson of this and other years to them seems to be that they should endeavor to sell as early as possible, especially the make of the first months of the season. By doing so they would probably realize as good or better prices than by holding—that is, by speculating—for a rise. And it is a great advantage to the trade in this country to get our goods into consumption as quickly as possible after they are fully ready for shipment. When we fail to do this we simply create a demand in the English market for the product of other countries—a market so large that it cannot be affected by local action. The value of this advice may be lessened at times by the cold storage system; but it is not destroyed. Another lesson of the drouth is the necessity for a better provision for feeding during the summer as well as during winter months. A judicious rotation of crops for soiling purposes would add enormously to the flow of milk in seasons like the past one. Indeed, it is not only advisable but necessary during all seasons in this climate. In this respect our dairymen have made very little progress. The drouth of last summer will have been a benefit in disguise if it has taught our dairymen the benefits and the absolute necessity of the soiling system.

I have referred to the extension and improvement of our industry; but in some of the older sections at least there are still far too many of the old and original factories with antiquated and inadequate equipment. These are gradually giving place to better buildings, more perfectly arranged, with modern and complete appliances. All this means true economy as well as the possibility of better quality. But there is one direction in which enconomy, so-called, is in danger of being carried too far. I refer to the price paid to the makers. Most men in the trade will agree with me that there is an ominous tendency towards squeezing the makers down to a point at which they cannot employ experienced or skilled help, use the best of boxes and other material which they engage to supply, care for the factory and its surroundings as they should, and retain an adequate balance of profit at the end of the season. We all know the disastrous effects of competition among school teachers, and the too general employment of the cheapest instead of the best of them. But what would be wrongly called the finished product of some of these alleged educators of our youth is not placed on the world's market and, therefore, cannot be judged when it leaves the hands of those who have marred it. Its quality is only found out by bitter individual failures in the race of life. But in cheese-making the finished product is at once subjected to the judgment of the most critical of all boards of examiners—the consumers of Great Britain and the dealers who cater to their tastes. It will be found therefore, that in too many cases the cheapest cheese-makers are the dearest in the end, We are demanding not only greater experience but special training at the dairy schools from the makers in these days. While the supply of men who are willing to take factories may cut down the price of making, it will be found in this, as in other industries, that to secure skilled and superior intelligence we must offer the incentive of a just, if not a liberal, reward for honest, intelligent and successful effort. The tendency of which I speak seems greatest in the older sections, which are in danger of losing their best men through inducements offered them by the newer districts and by other provinces or countries anxious not only to begin right, but to win in the race for supremacy. This Association might do a useful thing if it could bring about an arrangement by which all the factories would establish a fair and liberal rate for the manufacture of cheese according to the volume of the output in cash, then advertise the price to be paid for making, and select the maker in every case purely on merit and without any reference to the price which he is willing to take in competition with others. In the selection of a maker, experience, skill and success should be the sole test, rather than a willingness to work cheap.

There is another matter in connection with the trade to which I would like to draw your attention. It is the improvement of the home market, and the extent to which we have neglected our interests in reference to it. While Canadians have been known to the world for a generation past, and especially in recent years, as a nation of cheese-makers, we are not a nation of cheese eaters. Thousands of people in this country scarcely know the taste of a bit of good cheese. It was the same in the United States not so many years ago; but home consumption is now the chief reliance of dairymen over there. To the home demand is due the fact that our neighbors have been able to boast, through one of their trade journals, during the past few months, that they have been getting from a cent to a cent and a half more for their cheese than Canadians. This is extraordinary when we take into account the other fact that Canadian cheese has still, as it always has had, a decided preference in the British market. It is quite safe to say that the increase in the demand for home consumption during recent years has raised the value of the fall make of cheese in the United States nearly two cents a pound, if not more. It has revolutionized the trade. This is clear from the fact that while our neighbors have enormously increased their production, they export only about a quarter the amount of cheese to Britain which they did some years ago. They found the folly of depending on forty millions of British who were cheese eaters when they had sixty millions of Americans at home who could be made—and who have been made—cheese eaters. In Canada we have five millions of people. Great Britain has only eight times this number; but she consumes many times as much cheese per man as Canada. It would, I feel sure, be easy to increase the home consumption of cheese in a few years from five to tenfold. A reasonable effort on the part of our organized dairy interests might increase our yearly consumption by several hundred thousand boxes—enough to distinctly affect prices, especially in the fall—and an increased which would go on year by year in advancing ratio. This can never be done by feeding the Canadian people on the culls of the factories sold as first-class cheese. This Association and dairymen everywhere throughout Canada should at once take steps to place their own cheese of the very finest quality constantly on the tables of every hotel and of every citizen, rich and poor, throughout the land. Cheese is one of the cheapest, most healthful and available foods for the poor, while it is a luxury to the rich. Our failure to cultivate a taste for it among our own people has been greatly against the interests of the industry for the advancement of which we are here organized. At the annual convention in London two years ago I took occasion to draw attention to this important matter, and since then at various times through the press. But practically nothing has been done to enhance the reputation and increase the use of Canadian cheese among Canadians themselves.

Another matter of importance, and one which demands your consideration at this convention, is the question of branding our cheese. You are familiar with the discussion which has recently taken place in the press of Canada and of Great Britain on this point. Without going into the merits of the controversy, it might have been safe to admit that there may have been isolated cases, perhaps not in this district, in which Canadian dealers have marked summer cheese as fall make. But I am inclined to think that if there has been any sinning in this respect, it has probably been on the part of old country dealers who stand between the producer on this side and the retailer on the other. However, the effect of the mere discussion of such a question, or the existence of any suspicion across the water in reference to it, is not for the good of the industry here. My own feeling is that the advantages of branding our cheese indelibly on the bandage—that is, the name of the district, of the factory and the date of manufacture—would far exceed any possibility of disadvantage that can be suggested. Such a system would promote confidence in the producer, and prevent deception either on the part of the middlemen or of the makers of cheese It would enhance the value of the finest goods—and that is what you in the Ingersoll district are endeavoring to make, and do make. It would be, in a word, in the interest of honesty and high quality ; and these are the prime considerations with all dairymen worthy of the name. It is for you to consider whether it would not be wise as an Association to take steps, along with all the dairy interests of the country, to secure legislation that will make such branding compulsory. We have had some inferior cheese and bad butter in this country ; but it has always been our proud boast that we have no skim cheese or bogus butter. We should go further, and make it possible for every dealer here and in England to know exactly where and when every cheese he buys was made. If this were done it would work to the advantage of buyer and seller alike. It would inevitably stimulate effort and tend towards excellence in quality.

Looking over the past history of the trade and its present condition, it is gratifying to feel that the outlook for the Ontario dairymen is very good. It can be claimed for his industry that since it became of importance to the country, the price of cheese has, with the possible exception of a single year, afforded a margin of profit to the producer, while the average of profit has been extremely good. This is a remarkable fact during a period when nearly every other product of the farm has fluctuated in value, if it has not become permanently low. Whether this happy condition of the cheese trade will always remain, no one can tell. But in spite of any danger there may be from expansion in this or other countries of the world, or from other causes which we cannot control, the outlook for our dairymen continues fairly bright.

You have achieved success, and are still able to succeed, working along the safe road of high quality to perfection. As a class you have relied solely on manly self help, the exercise of intelligence, the earnest study of the results of experience and investigation, and patient industry. In this way you have secured profits which have not been seen, perhaps, in any other branch of agriculture. By pursuing the same policy of self help and progressive enterprise we have no need to ask for government bounties which you would not be willing to grant to all other industries or pursuits. You faced many difficulties in the early history of the trade alone and unaided. With the light of long experience at your disposal, with increased knowledge and old time energy, yon are still able to extract from the soil—through the cows—of this, the finest area of the American continent, an adequate reward for honest effort. In doing so you will contribute, in the future as in the past, to the growth and maintenance of what is to day the largest and most important industry in the Dominion, and to the prosperity and building up of this great Canada of ours.

The motion for adoption of the Director's report was seconded by Mr. A. F. McLaren and carried unanimously.

THE SECRETARY'S REPORT.

To the Board of Directors and Members of the Dairymen's Association of Western Ontario :

Gentlemen,—It is with pleasure that I present my second annual report as your Secretary.

During the year 1894 the work of the Association has progressed very favorably along the lines adopted in 1893. The various branches of the work have been kept before the public and made as effective as possible.

The number of meetings attended was not as large as during the year previous. There are several reasons for this. The experience of 1893 showed that at the greater number of annual meetings, especially in the larger cheese factories, so much time was taken up with transacting the business of the year and preparing for the following one that very little was left for an address or discussion. It was therefore, felt, that very little would be gained by attending meetings under such circumstances. Moreover, there were better results obtained, though the attendance was not so large, where special meetings were arranged to discuss dairy matters only. The larger number of these special meetings were held in the newer dairy districts, or in sections where information was wanted about starting a factory. Consequently not so many meetings could be held as in the older districts. It was also decided by your directors that when meetings were attended all necessary travelling expenses should be paid by the factory or persons arranging the meeting, or enough members for the Association secured to cover them. This regulation, though it lessened the number of meetings considerably, had the effect of arousing more interest in the meetings that were held and of securing more members for the Association. Besides, the office work of the Association has increased very largely, especially during December and January. This also made it impossible to attend many meetings held during these months.

Addresses were given at twenty special dairy and annual meetings, with an aggregate attendance of about 1,800. Nine addresses were given at farmers' institutes, thirteen at local conventions and the annual gatherings of sister associations, and a number of others given before the members of the various cheese markets and on other occasions. This would make a total of over fifty addresses on the more practical features of dairying, delivered in various parts of western Ontario.

Assistance was rendered in organizing a dairy Board of Trade at Newmarket, Ont. This is a point on the border line between the territory of the eastern and western associations, and within reach of a large number of our cheese factories which cannot very easily attend any other market. The section of country which these factories represent, and a large district to the north in Simcoe county, are well adapted for dairying, and are destined to become large producers of fine dairy products. Mr. T. B. Millar, whose services were retained till the end of the year, also addressed twelve meetings. Details of these will be given in his report as Instructor.

As will be seen, a number of farmers' institute meetings were attended during the year. These institute meetings afford an excellent opportunity for doing good dairy work. They cover a wider area than the local dairy meetings, and reach a larger number of representative farmers. They also save the time and expense connected with advertising and arranging for special dairy meetings, and are usually better attended. The work in connection with the institutes should be pushed with more vigor than formerly, and as many attended during the coming year as possible. It is not possible to attend any of the January institutes, but the March meetings, which are arranged by the local institutes, can be largely attended, as well as some of the December meetings.

Five successful local conventions were held at Dunnville, Shelburne, Wingham, Watford and Harrow. Unfortunately, at the time these meetings were arranged for, the roads were not in good condition. This prevented the attendance being as large as it would otherwise have been. An afternoon and evening session were held at each place and a good staff of speakers provided, consisting of Prof. Dean, R. Cleland, Mark Sprague, T. B. Millar, J. S. Pearce, R. Robertson, J. A. Ruddick, A. Gilbert, John Geary, and the President and Secretary of the Association. Each of the places where a meeting was held was visited by the Secretary, and the aid of the townspeople and local dairymen secured in making arrangements for the Convention. In nearly every case the citizens and local dairymen bore the expense of advertising and getting the people out. The thanks of the Association is therefore due to all those who assisted in making these local gatherings so successful. This line of work is meeting with increasing success. It will, therefore, be in the interests of the Association and of the dairy industry to continue this work during the present year, and arrange for a larger number of these local conventions.

The office work of the Association has largely increased, especially the correspondence. During the year over 700 letters were received and about 800 written in carrying on the work of the Association. A large share of the correspondence consisted of enquiries from factorymen and others wanting information about the building and starting of factories, and of applications from cheese-makers wanting factories.

At the beginning of the season, 1,000 four-page circulars, setting forth the work to be carried on during the cheese season, were mailed to the makers, salesmen of factories, and to the members of the Association. Six thousand pamphlet programmes, containing thirty-two pages, were issued at the beginning of the year to advertise the Ingersoll meeting, and a like number have been issued and mailed to the dairymen to advertise the present meeting. Though these entailed considerable work in compiling and distributing, they have borne rich fruit in the very successful Convention of 1894, and in the prospects for a good meeting here. Enough advertisements were secured in both cases to pay for the printing and cost of mailing. One thousand invitation circulars were also issued and mailed to the dairymen during December, inviting them to be present at the Convention.

In July, 500 circulars asking a number of questions on some of the more important phases of the factory system were sent out to the cheese-makers. These were issued with the view of gaining some definite information, more particularly as to the working of the butter-fat system of paying for milk, the winter dairying movement and some of the more salient features of dairying. Replies were received from 136 factories, about three-eighths of the total number in the west.

These returns show that there is an average of 72.7 patrons and 466.2 cows for each factory. This would be 6.8 cows per patron, and if 325 be taken as the total number of factories there would be a total of 23,627 patrons supplying the milk of 151,555 cows to the cheese factories in western Ontario.

The largest amount of money received by any patron per cow from the cheese factory for 1893 was $65, and the lowest $9.96. The average of the highest returns was $34.17 per cow, and the average of the lowest $17.54. This very wide variation indicates that while some of the patrons of our cheese factories are making a large profit out of the business, a large number are a long way below the line of profit. These figures give a mean average of $25.85 per cow, which may be somewhat higher than it would be if returns were in from all the factories. If we take 151,555 as being the number of cows, the estimated amount of money paid to the cheese factory patrons in the territory looked after by this Association would be $3,917,696.75.

The cost of manufacturing, including drawing, varies from 1¼ to 2½ cents per pound of cheese, making an average of 2 cents. In 1893 the cost of hauling milk varied from 3 to 15 cents per 100 lb, and in 1894 from 3 3 to 17 cents per 100 lb As these figures indicate, the cost of drawing runs beyond the margin of profit in many factories. No factory can afford to pay more than 10 cents per 100 lb. for hauling milk Yet there are a large number of factories, where the patronage is small and long distances have to be travelled in order to get the supply of milk, that have to pay considerably more than this amount.

The highest test of butter-fat for June, 1894, was 4.9 per cent, the lowest 1.8, and the average test of the vats 3.4 per cent. It is needless to say that the milk showing 1.8 per cent. of fat was received at a factory where the butter-fat system of paying for milk was not in operation. The average test of butter-fat for the season of 1893, as found from the returns from those factories which paid by the butter-fat system, was 3 43 per cent. From the replies received as to the satisfaction given by the system, it may be safely claimed that it is giving good general satisfaction Only five out of all the replies received state definitely that the butter-fat system had not given good satisfaction. This would be about 15 per cent. of the factories paying by test from which reports were received. Nearly all the reasons given for dissatisfaction were because some patrons thought that their milk did not test high enough. In one or two instances, the reason given was that the poor milk did not get justice In some cases the system was discontinued in 1894 because some of the neighboring factories had not adopted the test, while others discontinued it because the testing cost too much. The reports, taken as a whole, are very satisfactory, and indicate that paying for milk according to its quality has taken a firm hold upon our cheese factory system. Some of the advantages derived from the system are: Improved quality of milk resulting from better care of it by the patron; there is not so much opportunity for tampering with the milk by unscrupulous dairymen. The richer and poorer milk do not present such a wide variation as before the test was adopted. That is, the range between the highest and lowest test is not so wide as when the test was first used. The returns from the factories paying by test show the variation for June to average about .85 of 1 per cent.

The increase in the number of factories adopting the system in 1894 was not so large as could be desired. There was an increase, however, over 1893, chiefly in the newer dairy sections. The larger number of factories in the old dairy districts continued in 1894 along the same lines as formerly in respect to the butter-fat system This is largely due to the fact that the Babcock system was not kept so prominently before the public as in the previous year.

The prices obtained for butter made at the creameries last winter, varied from 23½ to 24 cents per lb. The cost of manufacturing varied from 3½ to 4 cents per lb., and the amount paid to patrons per 100 lb. of milk varied from 80 to 87.27 cents, averaging 82.53 cents per 100 lb. for the winter. There is a considerable increase in the number of factories making butter during the present winter, and a very large increase in the make of butter in the old winter creameries over previous years. As far as can be estimated, there are 13 cheese factories in western Ontario making butter during the winter, and two being run as skimming stations. These are located chiefly in those sections where farmers make a specialty of dairying. The scheme of having a number of skimming stations supplying to one central factory where the butter is made, is one that should commend itself to our factorymen.

These returns also show that 72.47 per cent. of the factories return the sour whey to the patrons, in the milk cans; that 2 9 per cent. partially return it, and that only 24 63 per cent. feed or sell the whey at the factory. If we take 325 as the total number of factories, we have 236 which return the sour whey to the patrons, in the milk cans; 9 which partially return it, and 80 which feed or sell the whey at the factories. Part of the whey is sold at a certain rate per standard cow. The highest price received per ton of cheese for whey is given as $5.40, and the lowest as $1.25, making an average of $3.70. The highest price received per standard cow (3,000 lb. of milk) is 60 cents, and the lowest 35 cents, making an average of 49.16 cents.

There was not so much demand for instruction in operating the Babcock milk tester as formerly, only two visits being made to factories for this purpose. Work along this line was confined chiefly to giving information to secretaries of factories as to the methods of making up the patrons' accounts according to the butter-fat system. This was done chiefly by correspondence.

During the summer 29 visits were made to cheese factories, and instruction in making given in several more factories which Mr. Millar was unable to visit.

Owing to the discontinuance of the Tavistock Dairy School, special instruction in cheese-making and in operating the Babcock milk tester was given in twenty factories, selected so as to cover the various dairy districts of western Ontario. This work was specially advertised among the cheese-makers by the circulars mailed to them in April, and met with good results. A large number of cheese makers availed themselves of this special opportunity for acquiring instruction in early cheese-making More details regarding this branch of the work are given in the report of Instructor Millar.

The work of keeping the interests of the Association and the important features of dairying before the public by means of the press was given more special attention. Arrangements were made with several newspapers circulating largely in the dairy districts to have regular contributions sent in every few weeks on matters pertaining to the work of the Association, and to the development of the dairy industry. This served to keep the Association and its interests before the public, and to awaken a keener interest in dairying. A large number of special articles on various features of dairying were also written and published in some of the leading agricultural papers. These, we hope, have resulted in much benefit to the trade. It may be appropriate just here to convey our sincere thanks to the press of western Ontario for the kindly interest shown in the Association, and the liberal assistance rendered in making its work more effectual and beneficial. Efforts will be made to make this branch of the Association's work still more effective during the coming season.

The membership of the Association for 1894 was 594, being 17 less than in 1893. This small decrease is largely due to the fact that not so many meetings were attended.

The membership can only be kept up by personal canvass, and this can best be done at the conventions or local meetings. Out of the 611 who were members in 1893, only some 150 became members in 1894. This is somewhat surprising, and shows that comparatively few of our dairymen are regular members of the Association. If those who once joined would continue as members, the membership would increase very rapidly, and in a few years be the means of increasing the Association's income very materially. It is hoped that our dairymen will recognize this fact and arrange in the future to have the membership fee sent in and not wait to be asked for it. The annual fee is only 50 cents.

A list of cheese-makers, with their addresses and factories, is kept on file in the Secretary's office. It is very desirous that this list should be as correct as possible. We, therefore, rely on the makers themselves to assist in making it so, as it will be to their own interests to do so. Whenever an address is changed, a favor will be conferred by notifying the Secretary at once.

In this report we have endeavored to set forth the more important features of the Secretary's work, and we trust that the particulars it contains will be beneficial and helpful to all who are interested in the development of dairying in western Ontario.

Thanking the directors and the members of the Executive Committee for their continued kindness during another year.

I remain,

Your obedient servant.

J. W. Wheaton,

Secretary.

The President: Our Secretary's report speaks for itself. If he will permit me I would like to say that I can testify to the zeal and efficiency with which he has done his work during the past year. We realize that this is a business organization. The directors have business duties to perform just as have the directors of a loan company. The work of such a concern cannot be carried on except through some active, efficient business man, and that man usually occupies the position of secretary. The efficiency of our Secretary is indicated by the enormous number of letters he has had to write. Though I am only the President, and not supposed to do the active work, I believe the number of letters I have written on the business of the Association during the year would number two or three hundred. I can, therefore, all the more appreciate what the Secretary has done. The report refers to the local meetings of last year. I would like to intimate now that the directors propose to continue in this line, that we propose to hold half a dozen district conventions during the next six weeks. We have before us the names of places at which we think these conventions might be held with advantage, but if there are any here who want a meeting in their locality will they please make their wishes known to the Secretary to day or to morrow, before these matters have been finally decided. We are anxious to have these meetings held at places where they will do the most good. Are there any remarks or questions respecting the contents of the report.

Mr. John Blaney: How many pounds of milk did it take to make a pound of cheese on the average where the payment for milk was based upon the percentage of butter-fat as shown by the Babcock tester, and how many where that system was not used? If less milk was required per pound of cheese where the system was in use that would be a strong reason why we should adopt it.

Mr. Wheaton: We cannot give these averages until all the reports from factories are in. So far we have received but few reports. Last year the reports showed clearly that where the test was in use it took less milk per pound of cheese than where it was not in use. Some of the makers present could answer that question better.

Mr. T. J. Dillon: We paid for milk according to the tester at two factories on Prince Edward Island last summer. It took an average of 10.49 pounds of milk per pound of cheese as against an average of 10.97 in 1893, when the milk was paid for according to weight.

The President: Prof. Dean and others are to speak on the subject of paying for milk according to the Babcock test, and the question is one of the most important and most interesting to be brought before the convention.

INSPECTOR MILLAR'S REPORT.

Mr. President, Ladies and Gentlemen: As instructor and inspector for this Association I take great pleasure in presenting to you my fourth annual report.

I commenced my duties on the 9th day of April. The first two months were devoted to giving instruction in cheese-making at central factories in almost every cheese-dairying district in the western part of this province. To place the work more clearly before you I have copied a part of the prospectus of the work issued last March by the Secretary, Mr. J. W. Wheaton.

"The services of Mr. T. B. Millar have been again secured as travelling instructor and inspector. Instead of having instruction given in making early spring cheese and in operating the Babcock milk tester in a few factories, as carried out last season, arrangements have been made for Mr Millar to spend rom two to three days each at the following factories on the dates mentioned opposite each.

Brownsville	April 10 to 14	Leitch's (Mt. Carmel)	May 16 and 17
Mapleton	" 16 to 18	Appin	" 18 and 19
Nilestown	" 19 to 21	Dutton	" 21 to 23
West Oxford	" 23 to 25	Harrow	" 24 and 25
Innerkip	" 26 to 28	Huron (near Ripley)	" 28 and 29
Vittoria	May 1 and 2	Dunkeld	" 30 and 31
Attercliffe Station	" 3 to 5	Harriston	June 1 and 2
North Brant	" 7 to 9	Flesherton	" 4 and 5
Birr	" 10 to 12	Avening	" 6 and 7
Batchelor's (Birnam)	" 14 and 15	Wyebridge	" 8 and

"These factories are centrally located and have been selected so as to give the cheese-makers in the various districts an opportunity of getting practical instruction in the best methods of making early cheese and of operating the Babcock milk tester. Every maker is cordially invited and strongly urged to spend a couple of days with Mr. Millar at any of these factories during his visits. Mr. Millar has been engaged as assistant instructor at the Provincial Dairy School during the past term, and has a wide experience as a practical maker, consequently the instruction that he will be able to give will be very valuable, and should be taken advantage of by everyone engaged in the manufacturing of cheese. The instruction at the factories named is given free of cost and it is hoped many makers will attend."

In this branch of my work I received a good deal of encouragement. One hundred and twenty makers took advantage of the instruction and were liberal in saying kind words, and in giving the Dairymen's Association a great deal of credit for adopting this line of work. If the directors see fit to continue this work in the future I am sure the makers will respond heartily, and I believe it will be the means of doing much good. By bringing the cheese-makers together and having them discuss the various methods of manufacturing cheese the result will be a more uniform and finer quality of cheese, and this is the object we have in view.

After completing this tour of giving instruction, I visited factories according to application. In all I visited 92 factories, making 125 visits.

The factories that made application for and received my services are as follows:

Oxford—Lawson's, Alderson's, Thamesford, Norwich Junction, East Zorra and Blandford.
Middlesex—Burnside, West Nissouri, Caradoc, Glencoe.
Lambton—Ridgetree, Forest, Uttoxeter, Gala Bank, Colinville.
Kent—Muirkirk.
Elgin—Northwood.
Norfolk—South Middleton, St. Williams, Black Creek, Rockford, Villa Nova, Vanessa.
Haldimand—Attercliffe Station, South Cayuga, Fork's Road, Lakeview, Tyneside, Kohler, West Jarvis.
Lincoln—Bismarck.
Wentworth—Woodburn.
Brant—South Dumfries, Kelvin.
Wellington—Wyandotte, Maryboro'.
Perth—Cedar Grove, Milverton, Monkton.
Huron—Fordwich, West Huron.

I tested 2, 719 samples of milk with the Quevenne lactometer, and 904 samples with the Babcock milk tester, making a total of 3,623 tests. Of these 2 samples tested less than 2 per cent., 37 samples between 2 and 3 per cent., 716 samples between 3 and 4 per cent, 149 over 4 per cent., only 1 sample tested more than 5 per cent. butter-fat. The richest sample of milk that I received for inspection tested 5.6 per cent. while the poorest sample tested 1.8 per cent of butter-fat.

In the months of April, May, June, July and August the samples of milk taken from the vats tested from 3.2 to 3.8 per cent. butter-fat. During these months the milk maintained an even quality, samples of whole milk testing from 3 to 4 per cent., with an average percentage of 3.5 or 3.6 per cent. butter-fat. Under ordinary circumstances in the month of August we might reasonably expect a higher percentage of butter fat, but this season, owing to the severe drouth, the scarcity of food and water, the excessive heat, and last, but not least, the horn-fly, all had a tendency towards the production of a poor quality of milk. This is a practical lesson, and all dairymen should profit by it. It shows clearly that if you would reap the best result from your cows you must provide a full supply of food and water and have the surroundings comfortable.

Samples of milk taken from the vats during the months of September, October and November tested from 3.8 per cent to 4 per cent. butter-fat. I also tested a number of samples of whey taken from the vats just before the curd was dipped. Some of these showed only a trace of butter-fat while others tested 3-10 of 1 per cent. butter-fat. By using good judgment in cutting and handling the curd, under ordinary circumstances the whey should not test more than 2-10 of 1 per cent. butter-fat, and all cheese-makers should strive to retain as much of the butter fat as is possible, as it adds both to the quality and quantity of the cheese.

I visited the farms of twenty-two patrons to get samples of milk as drawn from the cows, and laid information before magistrates against sixteen of these patrons for tampering with the milk sent to cheese factories. Fourteen of them pleaded guilty to the charges and were fined from $5 to $20 each, with costs. The other two defended their cases, were convicted and fined $20 each, with costs. One of these appealed against the decision of the magistrate and carried his case to the general sessions, held at Simcoe last December, where the judge quashed the appeal on some technical point without giving it a hearing. Ten of the above charges were for sending milk to be manufactured from which cream had been taken, four for diluting with water and two for keeping back strippings. It is pleasing to note that the charges against patrons for tampering with the milk are fewer in number this year than in the past.

The use of the Babcock milk tester is becoming more general each year. Out of the ninety-two factories visited forty-eight were supplied with a Babcock tester; twenty-one of these were paying for milk according to quality. While this system of payment is not giving perfect satisfaction, yet the majority of the patrons are well pleased with it, and those opposed to it are usually those who supply milk of a poor quality, as it yields them smaller returns than by the old method of pooling.

As to the condition of factories visited, while some are well equipped, neat and well kept, many are not at all what they ought to be. The yard is overgrown with weeds and strewn with rubbish of every description; the buildings are poorly constructed, the walls have but a slight protection from heat and cold, the floors are open and leaking, the stench nauseons and the whey tanks filthy. To some this may seem to be an exaggerated statement. Nevertheless, these things do exist to a certain extent in this banner province of ours, and it is a pity that it should be so when a little care and trouble on the maker's part and a little expense probably on the part of the owners or shareholders would work wonders and bring about a much better condition of affairs.

During the months of November and December I attended a number of dairy meetings in the counties of Essex, Kent and Wellington to address the patrons and discuss with them the various methods of dairying. The attendance in some places was not as large as we might wish for, but we must remember that in these western counties dairying is but in its infancy. During the present year a number of factories are being erected in the county of Essex and a few in Kent, so that no doubt a greater interest will now be taken in this industry than heretofore.

T. B. Millar,
London, Ontario.

The President: The Association has been fortunate in having so good an officer as Mr. Millar. So highly do we appreciate him that we have been glad to secure his services for another year. He is a better man now than he was before, for he had the good sense lately to get married. If you have remarks to make about his report, or any questions to ask, you have now the opportunity.

Mr. J S. Pearce: I think Mr. Millar s report a most important and valuable one. I think it would perhaps be well to give the inspector more power with respect to keeping factories clean and in good order. I saw one factory this fall—in November—in the floor of which were holes, some large enough to let an apple through. The people were trying to keep the place warm, yet did not know enough to stop these holes.

The President: It seems to me that the suggestion about giving more power to the inspector in such matters is a good one. Some years ago I went with our late lamented friend, Mr. Losee, than whom no better friend to the dairy industry ever lived in this country, and we visited scores of factories Had it not been for respect for the makers—some of whom were big men—I should like to have told the public through the press just what we saw. We visited factories of whose presence we were warned a mile away, and to some we had to, metaphorically speaking, cut our way through the perfume surrounding them. I think it would be a good thing if the inspector would report of each factory exactly how he found it, and if that report were incorporated in our proceedings it would be an advertisement which many factories would not want to have twice.

DAIRY GOODS AT OUR EXHIBITIONS.

Mr. J. S. Pearce was called upon and delivered a brief address on the above subject. He said: I had intended to prepare a paper on this subject, but have really not had time. I shall lay before you a few ideas, and I hope you will take the subject up and discuss it thoroughly, for there is much need for improvement in regard to dairy matters at our exhibitions. I may say that I have had a good deal of experience in looking after dairy exhibits at the Western Fair, having had charge of the dairy department for the last four years. The great difficulty I have found is to awaken sufficient interest among cheese makers and proprietors of factories Unless there has been a large amount of money to draw these people out there seems to be an unreadiness on the part of our cheese-makers to send their goods to our fairs. This I think is hardly fair When such an association as that of London or Toronto goes to the expense of providing for a dairy exhibit, it seems to me there should be a good response. Such exhibitions are a benefit to the cheese-makers, and it is a benefit to the cheese-maker to have his goods there either to receive a prize or to learn in what respect his work is defective. The difficulties in the way, however, seem to be several. In the first place the cheese-makers have to go to the expense of packing and shipping their cheese to the place where the exhibition is held. Then, of course, if they get no prizes they are out of pocket. In this matter cheese-makers are hampered by the proprietors, who insist upon the cheese-maker bearing all the expense, even to making good the value of the cheese at the price received for other cheese of the same month. It seems to me this is hardly fair. But that may be a matter for debate. To my mind it would be to the interest of the proprietors themselves to insist upon the cheese-maker showing his goods, assuring him of a portion of the expense even if he won no prize. Such a course would bring them into competition with well known factories, and would thus tend to improvement. During the last Western Fair I arranged to have the cheese and butter scored according to the score cards used at Chicago This method was much appreciated by every exhibitor of cheese and butter. Each exhibitor received a copy of his score card, giving him exactly the information he wanted as to the points of his exhibit, and showing what were the defects. Some discussion has been going on in the American papers concerning these exhibitions. One writer suggests that the experimental stations should take up the work, and do something to assist the factories and associations in handling these exhibits, and in making this branch of the fairs more instructive and more interesting. No doubt these stations could do much good work along this line. It has often occurred to me that there should be some discussion making known how the goods taking the prize were made, and then the judges or some other competent authority might explain to exhibitors and others interested the points on which certain goods took the prizes, and in what respect the other entries were defective. It has occurred to me also that this Association might take this matter up, and co-operate with the different exhibition associations in carrying out a programme which would make these exhibits still more useful and instructive to those interested in this class of work. I think it would be useful if this Association would purchase from half a dozen to ten of the best cheese at some of these exhibitions, to be laid aside and then brought out at this Convention, so that our makers might see what the finest cheese are like, how they taste, how they look, and how they handle. Such a man as Mr. Millar, our inspector, could explain the points of these goods, and tell what methods are to be adopted in order to produce them. A young man who was doing some work for me spent a week among the factories north of here, and he told me afterwards that it was the most profitable time he had ever spent. I had the satisfaction in October last of cutting up a cheese two years old—made in 1892 for the World's Fair. I am sorry I had not another of them, for I should have been glad to bring it here to show you all what a two-year-old cheese is I wonder how many in this audience have ever seen a cheese two years old. I think that if this Association had purchased some of these cheese and put them away, for exhibition here of what can be done in having a cheese of good keeping quailties, it would have been a stimulus, an educator and an object lesson which would be of much value to every cheesemaker. In New York city, and, I think, in some of the western states, a new method has been adopted in dividing the prize money at exhibitions. After discussing it with some of my friends I have come to the conclusion that it is a good plan. The method is this: Suppose there is $50 to be divided in prizes in a certain section. A minimum score is fixed—say 90 points. Then all exhibits scoring over that figure are awarded prizes in proportion to the extra points they have scored. This, as you will see, is a much fairer method than the present. If an exhibitor scored only one point extra he would get something toward his expenses. This would do much toward inducing cheese-makers to send their goods to the exhibition. This has been discussed by the directors of the Creameries' Association, and in all probability the new method will be adopted next fall in relation to exhibits of butter. I think this Association should discuss the matter and decide if the same method could not be advantageously adopted in relation to cheese

The PRESIDENT : There can be no doubt that these exhibitions bring about very valuable results. Of course, sometimes, the factories having the best reputations do not win the prizes. But that is for reasons that makers can easily understand—the cheese sent for exhibition may happen to be not quite up to the standard, or other factories may have specially good fortune in the goods sent for exhibition. It seems to me that the object of the exhibition should be to get at the average product of the factory, and I have often thought that if each exhibit were made up of one cheese from the make of every week or every month during the season—cheese that had been untouched by the tryer—the contest would be a fairer one. Another point. You know that at the Guelph cattle show most of the prize cattle are sold to the highest bidders and they readily bring high prices. If this course were followed with the prize cheese at the London and Industrial fairs a double advantage would result. In the first place the winning of a prize would be a still greater inducement to makers to exhibit and to do their best, and, in the second place, the best cheese would go into local consumption and would tend to educate our people into demanding cheese of the finest quality. There are a number of makers here and we should be glad to hear from them.

Mr. BLANEY : I congratulate you on that idea. If the prize cheese could be disposed of at the exhibition it would be a great benefit.

A MEMBER : That course is always pursued in the old country.

Mr. WHITE : In London there would be a larger number of entries if fewer cheese were required for each entry.

Mr. PEARCE : I do not see any need for so many cheese in one entry. One or two tubs of butter are as good as fifty, and one or two cheese of each month would be ample.

Mr. DILLON : For a number of years back higher prizes have been paid for colored than for white cheese. But it requires quite as much skill to make a white cheese as a colored one. The number of cheese to be sent in bars out those at any distance by reason of the heavy freight. If fewer boxes of cheese would do more makers would exhibit.

Mr. PEARCE : I am glad to hear these suggestions and should like to hear others. I have been instrumental in raising a great deal of money toward the Western Fair, and I want to make it a success, and toward that end I ask your co-operation.

Mr. GRAY : One year I exhibited and it cost me $20 to send the cheese to London, so you see it is pretty expensive work.

The PRESIDENT : We are delighted to have with us to-day Mr. Derbyshire, President of the Creameries' Association I am sure we shall be glad to hear his views upon the matter before us or upon any other matter he chooses to discuss.

Mr D. DERBYSHIRE, Brockville : I have been greatly interested in the meeting thus far and pleased to notice the efficient way in which business is conducted. Possibly never in the history of the Dairy Association has such an address been delivered by any occupant of the chair, as that with which your President opened this meeting. I congratulate you, Mr. President, upon that address. I am sure we shall be benefited by a careful study of what you have said. Of course there are some little points that perhaps an eastern man would not relish quite so much as do you gentlemen of the west. You know we love the name "Ingersoll," and we honor this Association for the grand work it has done. But we know there is an eastern country, and that there are eastern-made cheese that keep close up with the quality of the Ingersoll brand, if they do not excel it. We are doing all possible in our country to improve the quality of our goods, and are determined to do as well as human skill can do. We are advising our young men to attend one of the dairy schools, and so become acquainted with the best methods and all the modern devices for the production of fancy cheese and butter. Over one hundred of our young men will attend one of these schools this winter. I bring you greeting from the eastern dairymen. We are delighted with the work you have done to build up and establish our reputation in the old country for the production of fine dairy goods. We furnish now one-half the cheese required by the mother country. But more can be done

I believe that by improving the quality we can furnish 75 per cent. of the cheese required in Britain. We must give them a quality they can get nowhere outside of this Empire Province of Ontario. Moreover we must educate our own people to distinguish between the old-fashioned, ordinary high-salted butter, and the fine creamery butter that we can turn out in such large quantities. And the way to educate them in this respect is to give them the finer goods. The Directors' report which has been submitted to you is most valuable. This is a new departure and one worthy of commendation, for it is most desirable to have from the directors an account showing what they have done during the year. Your Secretary's report is interesting, and shows that he has been a most valuable officer. Your inspector also has given a good account of what he has been doing. He proves himself able and willing to do his share toward building up this grand dairy industry. A thing this Association should deprecate is the making of cheese in the winter. Such cheese cannot be up to the standard, which it is necessary for us to maintain in our own interest. Work only when and where you can make the finest quality of goods. Some factories, because butter is low, are making cheese to-day. I saw some of those cheese, and I can testify that they are not the quality we should make. We can make cheese from May to October and for the rest of the year we should make butter. It is complained that last year the dry weather kept us back. But we have dry weather every year. Then why not prepare for it as we prepare for spring time and harvest, which are hardly more regular in their coming than is the dry weather. One of our young men—young in years but with an old head for sound practice in the dairy business—has prepared for the dry weather. He has screen windows on his cow stable. The cows remain in the stable during the day when the flies are busy outside The cows eat ensilage corn which was laid away for them the year before; they were free from bother and attending right to business making milk. The corn they consumed cost a dollar a ton, which was less than pasture would cost, and they had all of it they could use. In the evening when the flies, were at rest, the cows were turned out to look about them and enjoy a little exercise. Why cannot we all get ready for the dry season in the same way? We are proud of the work you are doing. But do not think that Ingersoll is going to lead us any longer in the present day. All we ask is that no matter how well we do in the east you shall do all you can to keep alongside of us.

The PRESIDENT: It is an inspiration to have our friend speak to us in this enthusiastic way. Reverting to the subject of cheese exhibitions, I may say that we have a little exhibition of our own here to-day. I suggested to the Secretary, and to some of the other members of the Association, that we ought to present some object lessons here, and that to this end, some of the buyers should be asked to keep for us some of the worst cheese that were offered to them as well as the best and some examples of boxing as well. We could not do all we wished, but we have made some progress. [At this point a dilapidated box containing an irregular section of a cheese and a mass of curd loosely surrounded with a cloth and apparently intended to represent a cheese were brought upon the platform.] Mr. McLaren was one of the judges of cheese at the World's Fair and he will be able to explain to you in what respect this cheese is defective. This other exhibit is an example of the use of a box that should not have been used at all, and of the very faulty way in which cheese is sometimes prepared for the market. These things will be here for your inspection during the convention. On the subject of exhibitions I may say that the Industrial Exhibition Association has asked us to make them a grant this year. You will remember that two years ago we had a contest down there between the different cheese-making sections of the Dominion and it resulted very favorably to us in the west and to the Province of Ontario Whether we ought to pursue that policy for another year is a question for your consideration. I think we might proceed now to the election of a nominating committee.

D. A. DEMPSEY, moved, A. F. MCLAREN seconded, and it was unanimously resolved: That the following be the nominating committee: Messrs. R. Johnson, Harry White, J. A. James, R. M. Ballantyne and A. L. Leitch.

The PRESIDENT appointed Messrs T. B. Millar, Williams and James a Committee on Dairy Utensils.

A MEMBER: I would like to know the benefits of the separator. How large a dairy must one have to make the separator a profitable investment, and how long does it take to separate say 100 pounds of milk?

Mr. DILLON: The size of the separator should be according to the quantity of milk to be put through. You can get a separator for $100 that will separate 150 pounds in an hour—that is operated by hand. If you have a herd of ten or more cows it will pay you to get such a separator. You would not operate it by hand for more than a year. After that you would get steam or some other power.

Mr. PEARCE: I have contended that a man who has a dairy of ten cows cannot afford to be without a separator. That is, by not having a separator he is losing more than would pay for the machine. I could give you any number of instances of men who, with dairies of about fifteen cows are making a dollar a day out of their separators as compared with what they would have without it. Before they got the separator they lost as high as 1½ per cent. of butter-fat which they now save.

The meeting adjourned until the evening.

FIRST DAY.—EVENING SESSION.

On resuming in the evening, Mayor Monteith, of Stratford, on behalf of the citizens, extended a cordial welcome to the city to the members of the convention. He congratulated the dairymen upon the progress made by their industry and expressed the best wishes for the future.

The PRESIDENT, in responding, said, that the choice of Stratford as the place of meeting had been made after full consideration and the large attendance and excellent prospects for the success of the convention had fully justified that choice.

Mr. PEARCE moved, seconded by Mr. MCLAREN, that the following be the Committee on Resolutions: Thos. Ballantyne, Mayor Davison, Mayor Monteith, J. W. Wheaton and Harold Eagle.

The PRESIDENT: I have pleasure now in introducing to you a gentleman who is always welcome on our platform, Mr. JOHN GOULD, of Ohio.

SOME FIRST PRINCIPLES IN DAIRYING.

Mr. GOULD: Your President has asked me to get up and fill in some time. But he says: "Don't say much, for we want your speech for to-morrow." If there is anything a Yankee ought to be able to do it is to spout gas for fifteen minutes and say nothing, but to expect a man to talk and yet say nothing when he has such an intelligent audience as this, composed of dairymen and their wives and sweethearts, is to put him in a very unpleasant position. We come here as dairymen, as factorymen or creamerymen to discuss our great industry. I think that as a rule we talk too high We forget that back of the factoryman, the creameryman and the cheese-maker is the patron. Let us get back to first principles. If we are to have good butter and cheese, we must make sure that the farmer is right, for the man who milks the cow is the man who determines the quality of the product. I apprehend that the cheese and butter-makers in Canada and the United States, fortified as they are with the dairy schools and all that the governments are doing for them, are pretty well up in their trade. Even if they do not learn much more in the next five or ten years we shall not suffer much. Even if we have to leave these people where they are it will pay us to get back to first principles and talk to the dairymen. Even if we get down to the very A, B, C of our trade I think we shall not be far out of the road. We must get hold of the average man, or even the man not up to the average. The good dairyman takes care of himself; but we must get hold of the other man and lift him up. We must show this man that he is a manufacturer, teach him the nature of the material he is dealing with, and show him how he can get the greatest results from it. If I were to buy a ton of coal and found that it contained 500 pounds of clinker and ash, I would not buy the same kind of coal again, but would try to find somebody that would sell me a ton of coal with only 300 pounds of clinker and ash. So I want this farmer to understand that there are two kinds of feed, and that one kind may be better than another, even though the chemist may find that both contain an equal proportion of valuable elements. For instance, I feed a cow timothy hay and I find that she gets from it only 61 per cent. of the food value. You see, I am using coal that leaves 500 pounds of clinker and ash to the ton. But if I give my cow corn stalks I find that she assimilates 78 per cent. of the food value, and so I make a change to fuel which gives only 200 pounds of clinker and ash to the ton. And, besides, I find that that which costs me most is the feed that the cow gets least out of. Why should I draw a ton of coal five miles when I can get a better ton of coal that has to be hauled only one mile? Why should I spend much labor on a ton of feed for my cow when I can get a ton of what is better for her in the results it yields at a cost of less labor to myself? What will grow best on my land? What will yield the greatest food value? How can I get the greatest value off each acre? These are things we must study. I go to the city of Cleveland sometimes to see a friend of mine. He is a chemist, and all day he sits in his laboratory analyzing little specimens of iron ore that come from Lake Superior to find what per cent. of iron they contain. The treatment of large masses of ore is carried on according as it may be shown to be necessary by the chemist's report. The farmer who does not realize that he is a manufacturer throws all kinds of feed into the manger of his cows. Does the iron manufacturer throw all kinds of ore into his furnace without knowing exactly their value? No. He knows before the ore is put in that it contains so much phosphorus, so much iron, so much of other substances. If the farmer is to carry on his business as a manufacturer, as he ought to do, he must learn the feed value of what he gives his cows, and then see to it that he gets, as nearly as possible, that value out of them. Another thing the manufacturer does is to provide for his factory the best machines. Did you ever think of it that the cow is simply a machine for the work of the dairy? But there is this difference—two machines can be made alike, and when so made will do equal work. But two cows are never alike. Even the same cow will give a different supply at one time from that she gives at another. We must therefore study the cow and learn how, through this machine, the best results can be attained. The manufacturer does all he can to save energy—to save heat. We must do the same. So you see we must get down to first principles and, coming back, bring the average man up with us. Some will say that this man is dull-witted, and that he ought to be prosecuted and persecuted because his brain is thick. But we cannot get along without this man; it will do but little good if only a few advance and the great body of the people remain behind. We must not set up the standard for the advanced ones; the standard must be such as to stimulate the great body of people to effort. A few years ago I started entirely new in dairying, but determined to be bound by none of the old methods and traditions, and I was anxious to see if I could not set an example for the other fellows to pattern after. If I had had a bank to draw upon I could have built a ten thousand dollar barn, I could have bought the finest cows and plenty of them; I could have provided myself with separators and all that kind of thing, and at the end of the year I could have taken enough out of the bank to bring me out even. But I did not want to furnish an example for those who were in such a position. If I could show the average farmer how for a few dollars his barn can be made into just the place in which his cows will be comfortable; if I could show him how to raise the best feed on his own farm; if I could show him how to build a silo for less than a hundred dollars; if I could show him that he could buy good dairy cows at three for a hundred dollars—if I could do this I should feel that I had some hold on that fellow. One rainy day—one of those days when a man seems to try how like sixty he can look before night—I decided I would do some fixing up around the barn. Just when

I looked most like a son of the soil in my work a stranger appeared before me. He asked if I was John Gould. I said I would be if I was clean. He said he had read some articles of mine in the paper and had come down to get some dairy instruction. I washed up and put on a clean pair of jeans; then we sat down for a talk. I asked him what his circumstances were. He told me he was in debt, that he had a farm pretty well run down, some horses worth nothing, and so on—and three cows. I said, "Thank the Lord for the three cows. When you go home shoot what else you've got." He complained that he was $200 in debt. I told him I could hardly sympathize with him, for when I began dairying I was $4,800 in debt, and that three cows ought to pull him out of debt quick. So we sat there and planned. In our minds we built him a barn costing two or three hundred dollars—it was a sort of nice lean-to with some windows in it to let in the light. Next year he was to plant a field of corn. Then he was to draw a few loads from the saw-mill and make a silo ten feet square. He had three cows, and he was to run in debt for four more. We then went out to see how my cows looked. I beat it into him what dairy form in a cow was. If he would keep that form and certain signs in mind, I knew he could pick out a dairy cow himself. I told him that the main test was whether a cow looked like a cow or a steer. Then in our plans we made a little creamery for him out of fifty cent pails. We sawed a kerosene barrel in two to make him a deep-setting creamery. Altogether his barn and cows and outfit were to cost him not more than $500. He said, "I can fetch her," and he did. If you will go down near Java, a little town in western Ohio, you can see him to-day. You will find him with a dairy of fifty cows and a great silo, and he is selling butter in Toledo for 33 cents a pound. You will hear the good old Methodists talking about getting together and "enthusing" one another. That is what we dairymen want to do. My friend, of whom I have just been telling you, W. H. Strong, is one of the greatest dairymen in Ohio, and he says to me sometimes, "The brightest day I ever saw was that rainy day down at your cow stables. You showed me what a dairy cow looked like; you showed me that I did not need $10,000 to go into dairying." So I say we must get at these men and raise them up. And when everybody is interested and everybody trying to outstrip his neighbor and improve his own practice, then Canada's dairying will be upon the best footing, and will be the glory of Canada's agriculture.

The PRESIDENT: Mr. Gould cut his address far too short. However we are to hear from him at subsequent sessions of the convention. I will now introduce another American. You all know that in connection with the dairy the pork industry has become second in importance only to the cheese industry. For that reason we have invited a gentleman to come over and address us who has special knowledge of the care and feeding of swine in connection with the dairy. I have the honor to introduce to you Mr. Everett, President of the Wisconsin Dairymen's Association.

A VOICE FROM WISCONSIN.

Mr. EVERETT: I am to speak to you for only a few minutes to-night, but am to have an opportunity to address you at greater length to-morrow. You remember the story of the Methodist and the Congregational ministers. The Congregationalist had been addressing revival meetings with no very great success. So he asked his Methodist brother, "How is it that when I speak the people respond so poorly, while you are always so successful?" The answer was "You speak from your manuscript, and the devil stands behind you reading what you are to say, and hardens the hearts of your people against it. But I have neither manuscript nor notes, and the very devil himself does not know what I am going to say." That is my predicament. I would not have you think me insensible to the compliment paid me in asking me to speak to this splendid audience. I have always wanted to be brought in contact with your agricultural intelligence, for I felt sure that some of it would stick to me. I think I am possessed of a certain magnetism—not the magnetism of the public speaker or that of the leader who makes friends and inspires confidence, but the magnetism that draws to me agricultural information wherever I can find it, and I feel sure I can find it in Ontario. You are well known in Wisconsin. We have met you many times, and those meetings have inspired in us the greatest respect for you. We have frequently listened to your wisdom in our institutes and dairy meetings. One of the brightest men in our Agricultural College was formerly a resident of Ontario, and we should be very reluctant to part with him. You are known everywhere as breeders of fine live stock, and many a time we have parted with our good dollars in order that we might get the benefit of some of your skill as breeders. I come to you from the great state of Wisconsin, a state rich in its soil, its minerals and its lumber woods, a state having many bright men, such as ex-Governor Hoard, Dr. Babcock, Prof. Henry and others, from whose skill and intelligence dairymen in Ontario and throughout the world have benefited. We are proud of those men and love to do them honor. But in spite of all we have done I stand before this meeting to-night and hang my head in shame for the cheese industry of my native state. Wisconsin is to day rotten with filled cheese. And as I stand here I wonder if you appreciate your own position in this matter. Canada to-day has the best reputation for fine cheese of any country on the American continent. England comes to you and says, "We want your cheese and in return we will give you our gold." But Wisconsin goes to England and says, "We want your gold and will give you our cheese for it." But England's answer is: "We have had some of your cheese; you are a fraud and we want to have nothing more to do with you." But a brighter day is dawning for us in Wisconsin. The Wisconsin Dairymen's Association, which is one of the oldest and most powerful in the country, has taken hold of this evil determined to throttle it, and I hope before the winter is past we shall have a law against filled cheese. We have asked for a law against filled cheese, and against allowing oleomargarine to come into our markets under the guise of butter. You have been long-headed in your policy and in your legislation. The farmers of Ontario have been too shrewd to sell their skim-milk at ten cents a hundred for the factory man to make into filled cheese. The Ontario farmer has understood all along that a pound of poor cheese displaces in the market a pound of good cheese. You owe much to the intelligent enterprise of your Dairy Commissioner, and I want to say to you that you had better take good care of your Professor Robertson, for we know him in Wisconsin and we always have a hankering for good men and, if we could get him honorably we should be glad to take him in. As I listened to-day to the able address of your President, and to the other speeches I was struck with the determination on the part of the Ontario Dairymen's Association to do good work. We must get together and discuss means of improving every part of the industry. You cannot make good cheese or good butter out of poor milk, and the improvement of the supply must be our constant aim. The dairy schools were spoken of to-day. I hope the young men will attend these schools and take the dairy course, and a short course in agriculture as well. We need brighter men and more of them on our farms, and as we grow we shall need more intelligence still. But we must not be satisfied with only book learning. You cannot make even a successful lawyer, doctor or banker without practical work, much less can you make a successful farmer without practical instruction, for the farmer deals with the laws of Nature which are a manifestation of God. When in my orchard I see two kinds of apples growing on the same tree, when I see in the strawberry bed male and female plants, when in the corn field I find the fine roots running through the hard soil a length of six or seven feet I say to myself: What mystery is here! We know a little about these things and we must study hard to know more. I must not take up more of your time now. I thank you very much for the attention with which you have listened to me.

The PRESIDENT: One good thing about these meetings is that they bring our American friends over here. We learn from them and they from us, and neither side grudges the other the benefit it receives. The result of such visits must be to make the two kindred peoples better acquainted, and that is in the interest of both. We have made up our minds not to join our American friends politically, though after a while they may decide to come in with us. But it is to the interest of both sides and to the interest of the world that there should be friendship and a free dissemination of ideas amongst us. So I am glad these friends come from the other side of the line to give us their ideas. They become acquainted with us, and when they return they can tell their neighbors just what kind of people we are. As dairymen we owe our friends in the United States a great deal. Dr. Babcock I regard as one of the benefactors of his race. He made a great discovery and he gave it freely to the people, not seeking to make anything out of it for himself. Most men with such a discovery would have made themselves millionaires by means of it. I hope that some day we shall succeed in doing what I tried hard to do this year—bringing Dr. Babcock over here. You know what we owe to ex-Governor Hoard. Our friends now present are worthy representatives of such men. We welcome our friends here, and I am sure you will be glad to hear them speak at greater length to-morrow. I have now great pleasure in introducing to you a gentleman who needs no introduction to a Stratford audience, Mr. Ballantyne.

CHEESE-MAKING IN ONTARIO.

Mr. Thos Ballantyne: Although I knew my name was on the programme I was associated with other speakers who, I expected, would occupy the evening with pleasure and profit to you. So I hardly know what I should say. But if there is any subject upon which I can speak it is dairying, for I have been connected with it for the best part of my life. While Mr. Everett was speaking I thought of the convention we held twenty-seven years ago in Ingersoll, and of the American friends to whom at that time we were so much indebted—Mr. Willard, Mr. Harris Lewis and others whose names are familiar to all. The following summer the supply was in excess of the demand. The price had been high, and we expected that it would continue so, but it did not. The development had been so rapid that the market would not absorb the goods. It was very hard for us who had invested our money in dairying. There was disappointment and ruin. I remember that I had had about 120 patrons, but the number fell off in one year to about thirty. But we were not discouraged; we persevered, and to-day we have the most successful branch of the farming industry. Cheese dairying is to-day the only branch of farming that yields a profit. This we owe, as Mr. Everett says, to the fact that we did not adopt plans likely to injure the market. The State of Wisconsin is doing grand work for dairying through its experimental station at Madison, but it is a disgrace to every dairyman there that there should be any filled cheese. The same bait was held out to us. Those to whom we were accustomed to look for advice in dairying matters came upon the platform at Ingersoll (for most of our conventions were held there in those days), and tried to show us that we could make more money by using skim-milk to make our cheese, replacing the butter-fat with oleomargarine and lard. I remember rushing to the front of the platform and calling upon the people never to adulterate their goods. I told them that for the time a few factories, even some farmers, might be benefited, but the end would be ruin to the industry we were trying to build up. The result has been that, so far as I know, there has never been an adulterated cheese or a filled cheese made in Ontario. This is what has given us our reputation, and has caused our goods to be in demand. Our President has spoken of the number of factories from which whey is sent home in the milk cans. I hope some means will be taken in Western Ontario to prevent the sour whey being sent home in the cans. This may not be so bad as filled cheese, but at least it is within a degree of it. Where are the factories whose goods are in greatest demand at the best prices? You will find them to be the factories where the milk is delivered in good condition, and this is practically impossible where the whey is sent back in the cans that must bring the next day's supply of milk. What is the advantage in this practice that it should be so often followed? The whey must be twenty-four hours old, and by that time it is sour, miserable stuff not fit for feed. Besides, the acid destroys the tinning on the cans, and makes it practically impossible to keep them clean. I do not mean to say that whey can never be taken home with advantage. The whey may be emptied out and the can immediately cleaned thoroughly. But when one individual is delivering the milk of eight or ten patrons the returned can containing the whey is left to stand some time, as a rule, before being emptied. I am glad to say that nine-tenths of the factories in this locality do not follow this filthy practice—I can call it by no other name. If the whey has any feeding value it can be used to better advantage near the factory than by taking it home. I remember that our meetings used to be taken up with discussions about the making and handling of curds, the quantity of rennet, the development of acid, the percentage of salt, and so on, and if these things were not debated almost to the exclusion of everything else it was not considered a suitable dairymen's convention. Things have changed. I see here now a large proportion of farmers. They have come here to learn about the cow, how she should be treated in order to get the best results. There is no man who can discuss that subject better than our friend, John Gould. In one thing, I think, perhaps he left himself open to misapprehension. I am afraid that some understood him to believe that the old brindle cow is as good as any. I am sure Mr. Gould did not mean that you were not to pay attention to breeding, but that you were simply to select your cow. I am sure he will agree that much can be done by breeding. If you are breeding for the dairy keep on that line; don't attempt to combine dairy and beef qualities in the one animal. There is an odd animal here or there that is a good milker though not having the characteristics of the dairy breed, but such an animal is the exception. Having your cow, you must feed it properly. Twenty seven years ago corn was not known in the way in which it is used now. But later on we began to see the advantage of it, and I used to import a carload of corn every year and give it to the farmers to induce them to grow it. But we did not know how to grow corn; we sowed it too thick. We are learning better now. Corn is simply invaluable to us. You know what a dry year we had last year. Everything was burnt up, and if a green leaf did appear the grasshoppers devoured it. I came home from England and found my cows getting as good a ration as they do to-day. We were giving them corn mixed with bran and oats. The cow has been aptly called the machine of the dairy. Like every other machine the cow must have material to work upon before it can produce what is expected of it. Mr. Gould told you about the man who had the three cows, and how well he prospered after going into dairying. I have often said that I would not be afraid to take a farm with an outfit of cows and the necessary dairy stock with the understanding that I was to pay for the whole in five years. It is the certainty in dairying that makes it so profitable. There is nothing so elastic in the response of supply and demand as cheese. We have had very low prices, but these low prices do not continue. As soon as the price falls the consumption doubles or trebles, and the price is restored to a paying basis. Of course, there are disadvantages. One of these is the milking. I used not to find that a hardship myself, but nowadays you find many who object to it. Probably we shall be able to remove that objection by and bye. Last year I was in Scotland and visiting a gentleman in Ayrshire where they do nothing but dairying, and where you see nothing but Ayrshires. On that farm I saw milking machines at work. I had the pleasure of meeting the inventor, Dr. Shields. One of the best dairymen I know, Mr. Wallace, was using them on half his herd, and up to that time had found them most successful. You may be sure that such a man as Mr. Wallace would not use the machine if it interfered with the milking qualities of his herd, and if he said the machine was a success nobody should doubt it. The cows stood there quietly chewing their cud, not showing the slightest trace of nervousness, the best evidence that the machine was satisfactory. We are warned about over-production. I have heard about that for the last twenty-eight years. Our old friend, Mr. Farrington, used to say that he had heard about it all his life. There are factors now that did not exist years ago. The Australian colonies are becoming formidable competitors, not so much in cheese as in butter; but their production of butter is enormous. I find in *The Grocer* the following figures showing the imports in these lines from Australia and New Zealand as compared with the same month in previous years:

	Australia. cwt.	New Zealand. cwt.	Total. cwt.
1894	91,448	11,545	102,993
1893	60,575	4,986	65,561
1892	28,600	12,950	41,550
1891	20,200	11,060	33,260
1890	9,950	2,830	12,780

And for the twelve months the following figures for each of the last five years show the increase that has been going on :

	Australia. cwt.	New Zealand. cwt.	Total. cwt.
1894	432,486	120,723	553,209
1893	233,926	77,480	311,406
1892	108,341	62,723	171,064
1891	52,903	52,364	105,267
1890	21,674	35,221	56,895

Of course the effect has been materially to reduce the price of butter and so to increase the consumption of butter at the expense of oleomargarine, which has for years been taking the place of inferior butter. This material was sold on its merits. There may have been a small percentage sold as dairy butter, but a small percentage indeed. You find it in all the stores over there. I made it a point to visit the stores where the working people get their provisions, and there I found it constantly in demand. They prefer it to inferior butter, and so would any person. It had not the rich taste of creamery butter, but on the other hand, it had not the rank taste and flavor of bad butter. In Canada to-day we find the market flooded with old butter which is quite unsalable. In Toronto to-day I was talking with a gentleman who had some June creamery butter which had been kept in as cool a place as he had. He said he would like to get ten cents a pound for it, but would not refuse eight cents. But the day is past for selling old butter. Once people have got into the way of eating fresh butter they will not take the old. That reminds me that the question of winter dairying has been discussed. My opinion is the same as that I expressed five or six years ago, that as long as the production is less than the consumption we can get a fair price, but to-day the production is greater than the consumption, and so you see creamery butter selling for less than it has ever sold for in the winter time before. You can buy it in Toronto to-day at 20 cents a pound. Of course those creameries that have an established reputation can get a higher price. It is true the consumption of fresh creamery butter is increasing and must increase, for people will not go back to stale salt butter. But it is still possible that the production may be a little ahead of the demand, and if it is, then the price for the surplus fixes the price for the whole. Therefore I would not advise everyone to go into winter dairying whether it suits his circumstances or not. It is not grass butter we send out in the winter; it is only fodder butter at the best, and at the very time it reaches the British market the Australian butter is coming in. The Australian makers have not made the mistake some Canadians have of holding for an indefinite time. The butter is made in large creameries to day, is put in a refrigerator to-morrow, and lands in England perfectly fresh. Mr. Lowell, of Lowell & Christmas, the largest butter dealers in the world, told me that the Canadian butter was not in it in competition with the Australian. Suppose we do make a surplus in the winter, it arrives in England, in March or April in competition with the best grass butter and at a time when butter is always cheap. So while I am doing a little myself and hope to succeed, I do not shut my eyes to existing dangers. After all, if we ship more butter it means that we shall have less milk to make into cheese. In some of the districts where butter was formerly most extensively made —in the eastern townships, about Morrisburg and in the Brockville district for instance —they have lowered the production of butter and have taken more to making cheese. There is work for our creameries to do—not the least doubt of it. Private dairies can make good butter, but uniformity is needed as well as good quality, and that can only be had through the creamery system. Have no fear for dairying. It is the great bank for the farmer, the one branch of farming that has been found always sure.

The PRESIDENT: We are always glad to hear from men of such experience and ability as Mr. Ballantyne. The fact that he speaks so hopefully of the advent of a new milking machine is a most encouraging sign. If the machine is brought to practical perfection I am sure the dairymen of the world will give the inventor a place in the roll of fame alongside Dr. Babcock. I am glad to introduce to you now Mr. Chapais, Assistant

Dairy Commissioner, who has done so much for the development of the dairy industry in the Province of Quebec. While we in Ontario are able to say that we lead the country, and indeed, the continent, in the production of cheese, we must admit that Quebec has gone somewhat ahead of us in the production of butter. We know also that they are making remarkable progress in the cheese-making industry also. While we intend to keep the place we have won at the head of the line, we are manly enough to recognize with gladness the progress made by other provinces, and to congratulate them heartily upon their success. We are glad to welcome to our platform a gentleman who has done so much for our sister province as Mr. Chapais has done.

Mr. Chapais: An Irishman once was asked by a Frenchman if he understood French and his answer was "Of course, if it's spoken in English." I speak very good English—when I speak it in French. I have travelled seven hundred miles to attend this meeting. I live in a county in which there is only one Englishman, so I am not often called upon to speak English. In Quebec we are engaged as you are in advancing the interests of Canada. At a banquet we gave to Prof. Robertson two years ago at Sweetsburg, Mr. Derbyshire told us that if we of Quebec tried to get ahead of Ontario there would be a big fight. While we are naturally afraid of so big a man, we are doing our best to excel. We think that we have even gone a little ahead of you in butter making, not that we make better butter than you do, but that we have developed that branch of the dairy industry more than you have done. To-morrow I hope to give you the facts and figures to show what we have done. Our object is to make this Canada of ours the best place in the world to live in. We believe that Canada has advantages over every other country.

THINKING AND DOING IN DAIRYING.

Prof. Robertson was next introduced, and said: I am glad to be here and I congratulate the city of Stratford upon the excellence of this convention. We are apt to think that all our dairy work is done in the fields, or in the barns or factories. But the most profitable part of our dairy work is carried on in these conventions, and the gentlemen who have come to address you are not merely scientists or orators, but dairy workmen in the best sense of the term The most valuable part of a dairyman's equipment is a clear head—better than good cows, for it can find good cows and plenty of them; better than skill of hand, for it can direct and develop skill of hand in others. Ever since I milked cows I have been engaged in the dairy business. Some people seem to think I have retired from that business, but the fact is I am more actively engaged in it now than ever before, for I spend more hours a day at it than ever.

This dairy business has saved our country in great measure from financial embarrassments. We in Canada have escaped hard times more than the people of any other civilized country, because of our dairy industry. We have not been merely talking about wealth; we have been actually creating wealth from our resources and therefore we have it. We have used intelligence and industry and have reaped the benefits of doing so. I have named intelligence before industry. Let me show you why. The first preparation for a prosperous dairyman is to attend these conventions. A man getting ready to cut trees must not only have skill and strength, but he must sharpen his axe before he attempts to exercise his skill. A dairyman comes here to get his mind, the most valuable part of his outfit, sharpened by contact with other minds. Let me show you how this industry is saving the country from financial embarrassment. Up to the end of June last year we got from abroad sixteen and one half millions of dollars for our cheese and butter, about fifteen and one-half millions of that being for cheese. Now it happens that in Prince Edward Island the agricultural department controls the dairy stations. The people there will run the dairy business themselves soon, but in the meantime we do it. We pay the farmers by making advances in the form of checks. These get into circulation and pass into the hands of all classes, and you will not find a man on the Island but will say that it is the best business they ever had in the province. And yet we would not circulate in the whole summer more than $100,000 in checks. What then must be the effect of circulating about $16,500,000 throughout Canada. Go to any wholesale dealer in Montreal, and he will tell you that they get their money with the least delay from those districts where dairying is extensively carried on. He will tell you also that in those districts in Quebec where dairying has lately been taken up the people have more money than formerly, and that general business in those districts is growing greater in volume.

We have in Ontario the conditions for prosperity. We have a fertile soil. Even the most fertile soil will lose its productiveness in time, if crops are taken off and nothing returned. But the man who feeds cows puts back into the soil at least four-fifths of what crops take out of it. Lord Bacon, I think it was, said that the essential conditions of national prosperity was to have busy workshops. Our farms are busy workshops in the sense of being places where human skill and energy crystalize themselves into marketable goods, and the more of these busy workshops we can have the more stable will be our prosperity. We have good facilities for exchange but these can be improved. If time allowed, I should like to say something about the means of exchange between the farm milk stand and the treasurer's check book. If all the cost of the operations of the exchange—the wear and tear of the waggon carrying the milk, the loss through bad roads and so on—were charged against the milk we should see that there is room for saving there.

Dairying with us is not what it was in the old country when the dairyman was only a tradesman, hired at a certain wage to do a certain work. Dairying is a business requiring business capacities of a high order. The dairyman needs business acumen. If a man has acumen he will not keep a poor cow to take up the room and eat the feed of a good cow. Nor will his business sense allow him to keep cows because they are handsome, if they do not do handsomely at the milking pail. With good business qualities we can meet competition, and competition is increasing all the time. The keen business man tries to furnish what his customers want. A man in the clothing trade will not offer his customer a coat of the fashion of five years ago. And fashions change in the dairy business, and we must be ready to furnish the goods that are wanted. If we are to sell our butter in the British market we must be ready to meet the competition of the Australian butter. That butter is about two months old before it reaches the market, but it is in good condition, and I would like this Association to see about getting our goods to market in shape to compete. In cheese we have a good name in Britain, and we get as good a price as any producers of a similar article. I think the dealers have been squeezed so closely between the producers and the consumers that they get no more than a fair recompense for what they do in handling the goods. Still, while our fancy cheese was selling at 53 shillings a hundredweight, some cheese were quoted at 68 shillings a hundredweight. You see there is a premium of 3 cents a pound. That cheese contained no more milk, it would not nourish a man any better, but extra skill was manifested either in its body, its flavor or its appearance, and that extra skill it was which commanded the premium. Why haggle with the maker over an eighth of an eighth of an eighth of a cent a pound when you might have an increase of three cents a pound. It is merely a question of skill, you see, and you can draw skill into cheese-making simply by offering the necessary money inducements. There are factories in Ontario that could well afford to give high prices for that skill in order to get these profits. Another thing—we need to manage our dairies in such a way as to make them producers for twelve months in the year. Is it not better for the dairyman to sell creamery butter at 21 cents a pound than to feed cows in the winter and get nothing from them? We can produce butter for less than 20 cents a pound. We can produce butter as cheaply as any place in the world. I agree that after we have filled the local market we cannot expect to get a high price for our butter. But let us so reduce the cost of production as to meet the low price and stay in the market. As dairymen we are multiplying our sources of revenue. In these days of big steamships, railways, telegraphs, telephones, newspapers and market reports, the stress of competition is so keen that if a man can multiply his sources of revenue to five where he had only one before he is doing a safer business. We must specialize our business—with limitations. You cannot be wrong in specializing after the cow. The founder of one of the ancient cities sought the oracle for advice and was told "find the cow, follow the cow and where the cow rests and chews her cud there found the city and you shall prosper." That is good advice. The best conditions for human life are to be found where the cow prospers best. Follow the cow and specialize where you can—in milk, cream, butter, cheese, bacon, poultry. When you go to market fill your basket with a variety of good things and you are sure to attract customers. No man has a trade or profession offering better scope for all the powers with which man may be endowed than he who follows the profession of dairying. The most important thing for a dairyman is not to get up early, but the most important thing is for him to think clearly on his own business. The convention will help him to do that by driving off the mists that gather around the facts that concern him and his occupation. The dullest of all dull tools that ever hindered a man in his work—and I say it in all kindness—is a dull mind. The men who make a nation great are those who stir others up to make the most of their lives. It does not take many such men to make a nation great. If there had been only Gladstone in statesmanship England's name would always be great for statesmanship. Clear thinking is the first step toward right doing. The men who have made their country great have often come from humble farm homes. But the farmer's mind is apt to be like the harness-maker's knife—sharp only at one end. Very often he can cut his way through difficulties of party politics, but, until these conventions began the part of his mind devoted to his own business was like the dull end of the harness-maker's knife.

Our dairy schools are doing excellent work. Such a school may or may not turn out many good cheese-makers, but it helps all who attend it to think more clearly about their own business, and these will help their friends to think more clearly also. The new dairy school at Kingston and that at St. Hyacinthe, I hope, will do as good work as the others. Much of the progress of Quebec in dairying is due to the work of the school at St. Hyacinthe. But that school could not be in existence but for what the Dairyman's Association of the Province of Quebec had done to pave the way. We sometimes think the farmers are neglected. You have heard of the university extension movement through which men of learning are brought to cities such as this to give courses of university lectures. These conventions are part of the agricultural university extension work. Next to clear thinking the important thing is a fund of exact information. I hope the farmers will see to it that the experimental farm at Guelph is maintained at the greatest efficiency, because it is from experiments that we get our information. The farmers have been experimenting in a slow and tedious way, and they have learned much. But part of that work can be done better and more to the advantage of all at the experimental stations. The next important thing is persistent, hard work. The time has gone by when a man could become rich easily. There is no business that makes men more sensible or more honest than dairying, for it calls for hard work before it gives any pay. But it calls not only for persistent hard work but for persistent good work—it places a premium upon intelligence and perseverance. Let me emphasize that idea. Many think that a boy on the farm ought to do the hard work. I agree with that. But the work requiring intelligence is the hard work—give him a chance at it. We must seek to make ourselves masters of our business—it is easier to give in and be mastered than to master. If we master our conditions we find opportunities for wider and more joyous life. If we use the opportunities offered by these conventions we shall find that we can make the most of our conditions and consequently the most of ourselves.

The convention adjourned until the following morning.

SECOND DAY.—MORNING SESSION.

The President called the meeting to order, and introduced Mr. FLETCHER, Dominion Entomologist, of Ottawa.

INJURIOUS INSECTS.

Mr. FLETCHER: I suppose the most useful way to treat this subject will be to tell you of some of the insects that have been most injurious during the past year, and what we have learned about the best methods of dealing with them. I hope I may be able to cause some of you to ask questions. I cannot know your exact needs, and might talk all the morning about some matters that did not concern you at all. Though I have nearly three thousand correspondents, the number of letters coming from any one district must necessarily be small. Therefore I cannot know exactly what insects have given you the most trouble during the year.

First let us consider the horn fly. At the last convention I undertook to prophesy that it would not be so bad the following year as it had been the year before. I have had letters from members of your Association and others in this district telling me that there was a decided improvement. Now, I will venture another prophecy—the horn fly will be still less troublesome in the coming season. At the same time it will pay any man who gets money from the keeping of cows to apply the simple and cheap remedies which will reduce the injury from this cause. From my correspondence with farmers all over Canada I learn that this section, from here to London, suffered at one time most from the horn fly, and that while the pest is extending eastward it is less severely felt here than it was. This shows that the evil is extending from a centre, and it shows also that, in a district which has suffered from the horn fly for a year or two, the evil will grow less year by year, and will at last become so unimportant that it will not be necessary to apply any remedy at all. The statement is frequently made by farmers, that they are so busy they have no time to attend to the application of the remedy for such a trouble as the horn fly. Of course that is a matter of dollars and cents which he must settle for himself. If the farmer can better afford to suffer loss from these attacks than to take the time from those things that keep him busy, of course he is quite right to let the horn fly alone. But if the remedy is so cheap, simple and easily applied that it will pay him to give attention to the matter, let him take the time that may be necessary for the purpose. I need not give an elaborate description of the remedy. It is simply a mixture of soapsuds and coal oil, or sour milk, twice the quantity of coal oil to the milk or soapsuds, the whole to be reduced by ten times its own measure of cold water. This mixture may be applied with a spray pump, or sponge, or swab—anything to get it on the cattle. You need not be afraid of it injuring the cattle—it will not do them the least harm. If it has any effect upon them at all it is to soften the skin and make them more sleek and glossy. Nor is there any danger of it getting into the milk if it be applied with ordinary care. It has the advantage of cleaning your cattle of lice—not an easy thing to do in the ordinary way, but very easy if you will give it proper attention even before turning the animals out to pasture. After they are out in the pasture the lice disappear because the cattle improve in strength and can resist the attack. But there is no reason why you should allow your cattle to be annoyed by lice when this simple mixture will rid them of those injurious pests.

This remedy also reduces the attack of the warble maggots. The life history of the warble maggot is this—in the summer the female warble fly lays her eggs on the cow's back. This is licked off and swallowed by the animal and the maggot hatches and eventually works its way to the back of the animal beneath the skin. About March there is a lump on the cow's back containing a large maggot. The injury these creatures do is very great indeed. They tear the tissues so that a large quantity of matter forms, and on this they live. The irritation is caused by a series of prickles on the body of the maggot. The idea, sometimes expressed, that it is healthy for the cattle to have these maggots tearing their flesh is, of course, absurd. If you have ever had a boil on your neck you will remember how uncomfortable and ill-tempered it made you. Imagine the effect upon a cow of having two hundred sores as bad for her as a boil on the neck would be for you. It is a great drain upon the cow's system, and a large part of the feed you give her, instead of doing you any good, is used by the cow to gain strength to resist the attacks of these pests. The application of kerosene emulsion prevents the warble flies from laying their eggs, and so saves the cattle much annoyance. Even if you find your cattle troubled with warble maggots, these are easily controlled if you will give them a little attention. If you smear over the sore a mixture of lard and sulphur the maggot will soon be suffocated. It decays and is thrown off with other matter of the sore. The hide is injured to the extent of the hole, but the injury to the cow ceases and she soon recovers her strength.

Several insects have attacked your fodder crops during the past year. The pea-weevil, an insect which destroys the seed of the pea, is extending its ravages year by year. This is due entirely to negligence on the part of the pea growers, for the remedy is so simple and efficient that a little time devoted to applying it will prevent loss. The pea is one of the seeds that can be held for two or three years without loss of germinating power. I have proved that by experiment. I held some over once for seven years, and found there was a loss of only 25 per cent of germinating qualities. So if you hold over the seed peas in some receptacle from which the insect cannot escape you will find the trouble ended. You need not go to great expense for apparatus for destroying the weevil. All you need is some good stout paper or cotton bags. I do not think you often get the insects in the peas you buy of your seed merchant, for they generally treat the seed with a poisonous gas which destroys the insect. The farmers often get seed from one another, and if their seed comes from a district which has been attacked by the pea weevil they should take some means to destroy them. The remedy I have given you is a perfectly efficient one. The reason is that when the insect comes out of the pea seed it cannot eat its way through the paper or cotton bag, and as it cannot feed on the dry seed, it dies. Another insect which has done much injury to the peas in the Oshawa district, which is now becoming celebrated for the production of seed peas—for they supply not only our own seed merchants but those of the United States, Britain and countries of continental Europe—is a little moth which lays its egg on the green pea. From this egg hatches a little caterpillar, which eats its way into the pea and destroys it for seed purposes. This insect has multiplied very rapidly, and it is estimated that one-quarter of the peas grown in certain districts are injured by it. Besides the direct injury done, there is great loss owing to the fact that the seed must be all hand picked so as to exclude the damaged seeds. Let us examine the life history of this insect. We know that the eggs are laid soon after the flower has expanded—directly the young seed-pod is formed. The caterpillar hatches, and eats its way into the pod. As soon as it is full grown it eats its way out and falls to the ground. The peas are carried away at harvest time, but the insects are left in the field. You will find that where peas are grown a second year on land where this pest has once appeared, the second year's experience for the pea grower is worse than the first. Naturally so, for the insects are in the ground ready to reappear when the peas are ready to receive the eggs. The simplest remedy is to grow peas as far away as possible from the field in which they were grown before, for we learn from experience that even where an insect is well supplied with wings it very often does not extend its attacks the second year far beyond the locality in which it was bred the year before. We cannot depend upon the cold weather to kill these caterpillars, for many kinds of insects become torpid in the winter, and can stand forty below zero just as well as the mildest winter weather. But the agricultural treatment of the land often puts them in unnatural conditions and kills them. Thus plowing in the fall, or even plowing just after the crop has been taken off, will kill many of them, and another treatment of the same kind in the spring may make other remedies unnecessary.

The clover seed midge may now receive some attention with profit.

I have not spoken of the clover seed midge for four or five years. The fact is that the farmers were so thoroughly frightened that they used with vigor some of the simple remedies brought to their attention, and so reduced its attacks in Canada. But they have now grown careless again, and the midge is increasing and every year it is doing more and more damage to the red clover seed crop. This insect does not attack the alsike or white clover, but the red clover seed crop is much reduced by its ravages. Ten years ago the red clover crop of Canada was valued at half a million dollars. And it was really worth more than that, for it was not only bringing us a large revenue but was building up a reputation for Canadian red clover in the United States and in Europe. But five years ago this insect had increased to such an extent that the value of that crop was reduced to nothing—in fact we had to import clover seed from abroad. By careful study the life history of this insect was learned. When clover first comes into bloom a very minute fly—so small that it could not be seen except by one who closely studied the nature of the attack—comes and lays its eggs in the bud of the blooming clover. The maggot then hatches out and eats its way down into the seed. About the end of June the maggot is full-grown; it then eats its way out and falls to the ground. The usual time for cutting the clover was about the end of June or beginning of July, after all the maggots had left the clover heads and fallen to the ground. So, in taking away the crop of clover you left all the maggots in the ground among the growing clover. The clover hay was cut too late to make the best hay, and by the time the second crop was in bloom the little maggots had hatched into midges which laid their eggs and destroyed the crop of seed you wanted to harvest. A very simple remedy was adopted with the best results. But it has been neglected for the last year or two, and attention ought to be called to it again. That remedy is to cut or feed off the first crop before the 20th of June. By doing that you carry away the maggots in the clover heads instead of leaving them to get ready to attack the second crop. Let me digress for a moment and speak of the method of mixing clover and timothy for your crops. Unless you take pains to select a variety of clover which blooms with the timothy, that mixture is not the best one. There are, as you all know, two kinds of red clover—red mammoth and common red or June clover. The red June clover is mature and ready to cut about ten days before the mammoth clover. If you wish to grow clover and timothy together you should choose the clover that will come to maturity about the same time as the timothy. Now timothy and mammoth clover come to maturity at exactly the same time, and these are the two that should be grown together. If you want an earlier crop, I would advise you to get orchard grass or meadow fescue, because they will come into flower about the 21st of June, while timothy is only ready about the 1st of July. The President spoke of the loss from drouth last year. I think that if you will introduce in your pastures some of the orchard grass, you will find that you have a grass that will withstand drouth and will produce for you a larger amount of succulent, green and fresh feed than almost any of the other grasses. There should be no trouble in Canada for want of grass in the hot weather. We can grow to great perfection the grass that is made for hot weather, and that is Indian corn. If you will take the trouble to find out the principles underlying the method of cultivating you will have no difficulty in producing plenty of succulent feed for your cattle. For Indian corn hot weather is just what you want, but to make it grow you must cultivate it. You must stir up the top of the ground so as to keep down the moisture. If you cultivate in hot weather you keep your land moist. If you throw water in drops upon a perfectly dry road, the water will not mix with the dust, but remains in small globules. The same principle is applied in cultivating. Keep a thin layer on the top of the ground as dry as you can, and you will find that the under part will retain its moisture even in the hottest weather. If the top soil is not broken up the soil is of the same nature all the way through, and the moisture evaporates rapidly from below the surface. You can, if you wish, save the corn in the form of ensilage. But if you want fresh feed for your cattle in the shape of pasture, try some of the orchard grass I have mentioned. It is one of the quickest growing grasses, very succulent in nature, and one I would like to see very much more generally introduced. Another excellent grass is the meadow fescue. It is a heavy cropper, rich and succulent; it will stand our climate well and it germinates freely. The perennial and Italian rye grasses, so much grown in Europe, have not succeeded so well in Canada as to induce us to grow them to any extent. However, the seed is cheap, it germinates early and will grow tolerably well in some parts of Canada, but I think that the meadow fescue will pay you much better.

The chief insect injuries of the year have been to fruits. It may be said that as dairymen you are not interested in fruit culture, but the fact that all are fruit users and that all benefit by the increase in the country's output of fruit makes this a matter of interest to everybody. And, besides, there are probably none of you who have dairies, but are interested in knowing how fruits can best be grown. Particularly is this a matter of interest in western Ontario, where fruit growing, as well as dairying, is so largely followed. The insect injuries of the year show one or two new forms of attack of which we have had no previous record, but by far the greater part of the injury has been by pests that have been thoroughly studied, pests for which remedies have already been discovered. The fact that these insects are committing such ravages year after year is entirely due to the negligence of fruit growers and their failure to apply the advised simple remedies at the right time. This too is a mere matter of business, for it is not businesslike for a man to suffer a large diminution of income simply because he will not meet the expense or undertake the little labor necessary to save him from that loss. The dairyman realizes the importance of getting the largest quantity of milk from his cattle. In the same way if the fruit grower would realize that insects which he thinks are unimportant lessen the product of his trees and so lower his income he would see the necessity. Plenty of people like to farm because of the pleasure it gives them, and because they like to feel that they have so noble an occupation. I once heard Mr. Awrey say that the farmer need not be ashamed of his vocation, for it was the only one that the Queen of England ever engaged in, and if she was not ashamed of it none of us need be. But most of us practise farming for what we can get out of it. So the crucial test for everything we do, is the simple business question whether it will pay or not. The most sensible man is he who attends to the details of his business so as to make his business pay. Farmers frequently have told me that they had not time to attend to these matters. But during the last year I have had letters from many correspondents who say that things have come to such a pass in fruit-growing that they must pay attention to one matter at any rate. The spraying of fruit trees has now become a necessity to prevent the great loss through insects and fungous diseases. The study of these matters has been carried far enough to prove that we can reduce the attacks of these enemies to such an extent that the effort will more than repay the farmer who makes it. The crop of apples in Ontario last year was a very poor one indeed. But it is when others have a poor crop that the wise man makes most money. We have many instances of men who sprayed their trees last year and got large returns in consequence, while those who failed to take this precaution lost almost all their fruit. This object lesson has not been lost upon the people of Ontario. I suppose there are ten times as many people prepared to spray next season as there ever were before in Canada, and the results well justify the expenditure. We can save 75 per cent. of our apples by spraying in the spring, and we can save 50 per cent. of our plums by spraying just after the plums have formed. You have a man to find out these things for you. You are paying a man at Ottawa to do that work. You have only to write to the Experimental Farm at Ottawa for any information you require. I can promise you in advance that even if you cannot get all you want you will receive some information which will save you time, money and labor. This is not given you by somebody as a matter of grace or favor. It is yours You pay for it. The man who is doing the work at Ottawa is in your employ and in asking him for help you are asking for what is yours by right, and that man at Ottawa (I am that man) will be all the better pleased if you will exert that right, for he is only desirous of being useful. I hope those present will ask questions as to the insect pests from which their own crops have suffered, then I can talk more directly to the purpose.

Mr. Hunter: How about the clover root-borer.

Mr. Fletcher: You will find that treated of in the *Farmer's Advocate* of two years ago. Directly it is detected plow up the clover, otherwise it develops and destroys the second year clover. Clover is one of the best fertilizers you can plow in, so there is no loss. Cut the first crop and then plow the clover in. Another injurious insect is the clover weevil, which attacks the leaves and seeds of the clover. It is in the grub state at the time the clover is ready to be cut, and if the clover is cut early, just after the flower has begun to turn brown, you can reduce the injury done by the insect very much.

Mr. BLANEY : Give us a remedy for the turnip louse.

Mr. FLETCHER : The turnip louse begins in small colonies. If your men when hoeing the turnips will look out for it, the few plants that show it can be destroyed. Or they can be syringed or sprayed with the mixture of coal oil and soap suds I referred to. In one of our fields this pest was found in the early part of August. It was in two patches, each about one-sixth the size of this hall. The plants were destroyed, with the result that the rest of the crop was saved. On the adjoining farm they were not attended to, and the proprietor lost a large part of his crop.

A MEMBER: What is the best time to spray apple trees?

Mr. FLETCHER : Directly after the flowers drop. I presume you refer to spraying for the codling moth. In some parts of western Ontario there are two broods of the codling moth, the second being much more injurious than the first, if the first has been neglected. In no case, spray before the flowers drop. Spray with a mixture of Paris green—one pound to two hundred gallons of water.

A MEMBER : How often should the trees be sprayed?

Mr. FLETCHER : Twice.

A MEMBER : What is the best kind of spray pump?

Mr. FLETCHER : There are several kinds. All seedsmen in Canada now keep them in stock. You can get a hand pump for about $4, a knapsack pump for about $12, and a pump to be mounted on a cart so that it can be hauled about the orchard by a horse for about $15.

A MEMBER : Which nozzle should be used?

Mr. FLETCHER : There are so many nozzles which do effective work that it is not necessary to recommend any one specially. Use any nozzle that will reduce the liquid to a spray. There is a distinction between spraying and showering upon the trees great drops of liquid. If your pump is out of order get it mended and a new nozzle as frequently as necessary, for by throwing the liquid on in drops you not only lose material but you may injure your plant. Good nozzles are supplied by all the seedsmen.

Mr. WOOLEY : Can you tell us something about crimson clover?

Mr. FLETCHER : Very little has been cultivated in this country. There has been a good deal of disappointment, due to the fact that farmers do not properly appreciate that ordinary clover is a biennial. I know that in the third or even fourth year you will find some plants, but they are from seeds that failed to germinate with the rest, or that seeded from a few heads not cut in the first or second years. Now, crimson clover is a plant that lives only one year. In England we used to grow it largely for sheep. We sowed it in the autumn and fed it in March, or later on during the summer. In the State of New York they are growing it in the same way. In the few experiments I have tried the seed was sown in the spring and gave a tolerable crop of excellent feed during the summer, but all the plants were killed during the autumn. I have sown three patches in the autumn. These came up and made a good showing. We shall see if the plants live during the winter, and next summer records will be kept, and we shall see what the plant is worth. If it will stand the winter I think we may use it as an early crop, but I do not hope much from it except as a sort of catch crop. Mr. Pearce told me this morning that in the Southern States it was used in a very convenient manner. It is sown after the last cultivation of corn, and when the crop is reaped the clover is plowed in, and in that way helps fields that have been much run down, by adding to the soil the nitrogen that has been collected by the leaves.

Mr. WOOLEY : You mentioned orchard grass. Please tell us more about that and about the difficulty of getting it out.

Mr. FLETCHER : Orchard grass certainly does grow in a bunchy manner, and is a very persistent grass, but can easily be eradicated when you wish it, for it has no running roots, and light plowing will destroy it. There is a clover I should like to draw attention to, one that demands more attention than farmers have given it—lucerne or alfalfa. This is a very valuable clover. It gives a heavy crop of hay much liked by cattle, and it succeeds in all kinds of land except where water comes near the surface. It is very persistent. I am told that in Colorado there are fields of it that have persisted for seventy-five years, having first been planted by the Jesuit missionaries.

Rev. Mr. CLARKE : Is crimson clover useful as a fertilizer ?

Mr. FLETCHER : All the clovers are extremely useful as fertilizers ; in fact all the pea family are valuable in that way. Crimson clover grows thick and close to the ground, so it is in a convenient form to be plowed under.

A VOICE : Has it a deep root ?

Mr. FLETCHER : No ; it has a small root.

Mr. WOOLEY : In Norfolk county there has been trouble with smutting of spring grain. For some time many of us have treated our fall wheat with blue stone. How would you manage with spring grain ?

Mr. FLETCHER : Was it grown from imported seed ?

Mr. WOOLEY : My own was imported at first, but I have sown it for three years. I have tried to get pure seed in the district, but could not.

Mr. FLETCHER : We have made little advance in the treatment of grain within the last two hundred years. There is a treatment recommended with hot water, but that is expensive because of the apparatus, and dangerous because of the risk you run of destroying the seed. But experience shows that if farmers will treat their seed with blue stone they can reduce the injury from smut very largely. The results have been very marked in the Northwest for the last three or four years. Farmers that have treated their seed have grown clean crops up to the very fences marking off a field where there was a smutty crop. Spring grain is generally more attacked by smut than the fall grain. We found that in importing new seed from Europe we frequently found much smut for a year or two. Complaint was made of the Ladoga wheat at first, that it was smutty. But, growing it here, after about the fourth year the smut disappeared. This was due to the fact that farmers who got the new grain were more careful than they would otherwise have been, and treated it with bluestone. When we found it was smutty we treated it in the same way. The effect of this treatment upon the germinating power of the seed is inappreciable. The solution is about a pound of bluestone to about four gallons of water. The bluestone will dissolve freely. The grain is poured into the fluid, or the fluid may be sprinkled over the grain, the grain being thoroughly turned with a shovel so that each kernel may be thoroughly wet with the mixture, and the spores thus destroyed.

A MEMBER : Does that apply to seed corn ?

Mr. FLETCHER : No. For some reason we have not yet got at the true nature of smut in seed corn. It is not of the same nature as that in wheat, and seems more difficult to treat. It is known that smut in corn prevails more in some districts than in others, that it does not necessarily follow year by year and that it is largely due to the season in which the corn is grown. But, of course, it is advisable for everybody who finds smut in his corn to cut off the large clusters and burn them.

Mr EVERETT, Wisconsin : In the west we find that this is a disease that baffles us. But we find that if we raise corn two or three years on the same field we are apt to have serious trouble with smut. So we pay close attention to rotation.

Mr. FLETCHER : I am glad Mr. Everett mentioned that, for it is an illustration of what I have been saying about insects. No doubt many spores of the fungus pass the winter on the ground. If we can put on the land a crop which is not liable to the disease we escape its attack.

Mr. WOOLEY : A gentleman here who is too modest to get upon his feet wants to know the best combination of grasses for grazing purposes on low ground—river flats.

Mr. Fletcher : There are certain grasses in the seed catalogues which will succeed in some districts of Canada, but not in others. These must not be recommended for pasture mixtures. I will give you a mixture which has given good satisfaction over a large portion of Canada. It will give a heavy crop on good land, a very fair crop even on poor land. I should like if some of you would try it. The mixture is : Timothy, 6 pounds ; meadow fescue, 4 pounds ; orchard grass 2 pounds, and Kentucky blue grass 1 pound. Then, if your land is wet, I would add red top, 1 pound. I would sow it in the spring with a light seeding of rye or wheat, and with the grasses I would sow two pounds each of the four clovers—red, white, alsike and Lucerne. You can grow it for hay two years and use it for pasture two years, or longer if you require, and then turn it under the third or fourth year. Some of you may know the experiments we have carried on at Ottawa with grasses. We grew 200 different kinds of grasses, and have made notes year by year as to their chemical analysis, their palatability to stock and the weight of yield per acre, both hay and green food.

A Member : If the soil was wet would you sow red clover ?

Mr. Fletcher : I would put it in a general mixture like that. If the land is wet the red clover will not give such good returns. But the difficulty is to know what is meant by "wet land ;" what one man would consider "wet" another would not call "wet" at all.

A Member : Would it be successful on well-drained muck swamps ?

Mr. Fletcher : Yes.

A Member : Have you tried sainfoin ?

Prof. Fletcher : Yes ; but it has not succeeded so well as the other clovers that are far better known. It is largely grown in the south of England, and on the chalk and limestone hills it gives a pretty heavy crop. It has not succeeded with us so well as to make it worth while to give it the place of alsike clover, and the yield is less than that of the mammoth red or alsike. It is perfectly hardy and stands the winter well.

A Member : Have you tried crested dog's tail ?

Mr. Fletcher : Yes, it has not succeeded with us ; it has been killed out almost invariably the first year.

A Member : What is the best remedy for apple scab ?

Mr. Fletcher : The best remedy is the Bordeaux mixture. It is sprayed early in the spring before the buds open, and three times afterwards, a fortnight apart. It has no injurious effect upon the tree, and if applied regularly and at the proper time, gives good results. The application of the remedy must not depend upon whether the trees look as if they needed it, but when the time comes the remedy must be applied. I have seen that particularly in the case of potatoes which were treated with this same mixture as a protection against potato rot.

A Member : Was that for rot of the tuber or of the plant ?

Mr. Fletcher : It is the same thing. It shows itself first in the form of a rust on the leaves. How that got there was this : When you sowed your potatoes there was on some of them, whether you noticed it or not, a small patch of grey mildew or dry rot. By the first of August that disease has made its way up through the stalk of the plant, and has developed in the leaves as potato rust. Anyone who knows potato rot can detect its presence at once on entering a potato field where it exists, by the smell. If the plants are sprayed with the Bordeaux mixture, and this treatment is repeated every fortnight until the potatoes are fit to be dug, which is generally about the middle of September, you will find that your potatoes have not been much injured by the rot. But if this is neglected the consequences may be very serious. You will find, moreover, as a result of this treatment there are very few small potatoes, for the reason that those that would have been small had the growth of the plant been hindered by the rust, have had time to develop. The rust is not confined to those plants of which the seeds were affected before planting. The rust develops on the leaves of the growing plant and the spores are carried by the wind to the other plants ; or they are washed by the rain to the ground and so reach the tubers. In that case the tuber may rot, or, as is occasionally the case in dry weather, the disease does not develop but remains as a patch of dry rot upon the tuber. In the latter case it may develop and affect other tubers while all are lying in the cellar, or it may be dry rot, in which case it will carry the disease into your potato field when you plant next year. The application of this Bordeaux mixture will control the disease to a very large extent. The mixture consists of 6 pounds of blue stone, and 4 pounds of lime mixed in 45 gallons of water.

A MEMBER : How is the bark louse to be controlled?

Mr. FLETCHER : The bark louse is doing a great deal of injury. It has spread throughout Canada because the means by which its multiplication may be prevented have been neglected. It can be met and controlled at two seasons of the year by spraying with the emulsion of coal oil and soap suds of which I have already spoken. The spraying can be done either late in the winter or when the young lice hatch about June 1st in this part of Canada. If the spraying is done carefully the insect is destroyed and the tree soon regains its vigor.

A MEMBER : Is there a remedy for the pototo rot by the treatment of the seed?

Mr. FLETCHER : No; the disease is below the skin, so that the potatoes cannot be treated externally.

Mr. EVERETT : We sprayed thoroughly with the Bordeaux mixture, both our orchard and our potatoes. The first time we sprayed the orchard was before the bloom, then just after bloom, and then we added Paris green for the codling moth. Is that right?

Mr. FLETCHER : Yes, sir. When you are spraying for the apple scab, you must apply the first spray before the flowers open. At the same time you destroy certain insects, such as the bud moth.

The PRESIDENT : If you are through with Prof. Fletcher, I shall introduce the next speaker. I am glad to be able to call upon Mr. Everett to whom we listened with such pleasure last night.

THE DAIRY AND THE HOG.

Mr. EVERETT : I am very glad to be with you this morning. I am to discuss the plain, homely subject of the hog, and I want to talk about it in a practical way just as I would if you were in my hog house or barnyard over in Wisconsin. You know that I come from a state where there are many noted swine-breeders. Among them is Theodore Lewis, who, perhaps, is not a stranger to all of you. He is an old German living up in the woods in the northwestern part of our state, and he has grown rich and wise through breeding swine. He says many funny things. On one occasion he was talking to an audience of farmers, and advising them to feed the hogs dry feed. A farmer jumped up and said: "You are all wrong; it takes the hogs too long to eat dry feed." "Ish dot so?" answered Lewis. "Vill you tell me, mein friend, vat is de hog's time vorth?" I could wish for your sakes that our old friend were here to take my place. First let me say I am not advocating any particular breed of hogs. You ought to choose the breed you like best, for the simple reason that a man will do best with what he likes best. If you don't like dairying, keep out of it and go into some business that you do like. If you can't stand it to have the cow whip her tail around your neck but you must get mad and whack her with the milking stool, don't go into dairying. My business is dairying and swine, and they go well together. The hog has not had access to good society in days gone by, and I suppose it was partly due to the fact that I also was denied that privilege in my early days that I took naturally to the company of the hog. And I have stuck to him, because he has been a good friend to me, and has helped me out of many financial scrapes. We ought to choose what we like best. If you like the Poland China hog the best, stand by him and you will do well with him. Not that he is necessarily the best, but your thinking him the best makes him so for you. I would like you to understand clearly that I speak from the standpoint of a feeder for the market. It is true I sell many hogs for breeding purposes, but I also put from fifty to a hundred hogs on the Chicago market each year.

We cannot all be breeders of pure swine, but we cannot now see a limit to the number who can feed for the market. While I put a good many on the market every one is pure bred and entitled to register—I can't afford to keep any other kind. One reason is that a pure bred hog will make me more pounds of pork for a given quantity of feed than one that is not pure bred, and then I am able to sell the best of my swine for breeding purposes. It costs a little more to start with pure bred swine, for you must purchase one or two pure bred dams and must pay for pure bred sires. But by using pure bred sires always, your hogs are always pure. It is the same as with the dairy cow. That breed has been produced by constant breeding in one direction, the object being to get a cow that will produce the most milk for the feed that is given her. If that object is lost sight of and another strain introduced, you begin to breed away from dairy lines. After the Missouri joins the Mississippi the two streams flow side by side in the same bed, the line dividing them being clearly marked, the Mississippi waters being clear, those of the Missouri muddy. But at length the line grows less and less defined, and finally the stronger-colored waters of the Missouri dominate the others, and the Mississippi loses the distinctive character it formerly had. So it is in breeding. If you try to breed general purpose cattle, the stronger strain will predominate in the offspring. We breed from pure sows beginning at one year old, preferably up to three or four years old. We sometimes keep sows until they are six years old, but by that time they grow very wise—they know every door and gate on the farm, and we can do nothing with them. Besides they tend to grow lean. So we get rid of them. But if you have a good sow—a uniform breeder, a good milker, a good mother—keep her as long as she has these good qualities. I think it is a mistake to do as so many of our farmers do—to sell the old sow because there is a lot of pork there, and then breed a young sow. The old sow is more likely to raise a uniform litter. I have sows four, five and six years old that give me two litters a year of seven or eight pigs each, and never a titman among them. The sire is more than half the herd. We ought to exercise great care in choosing the sire. Many of our farmers are looking for a hog that has large coarse bones. Over in the states they say hogs are becoming too fine, that they do not stand up well on their legs. That is not the result of breeding, it is the result of feeding. I am looking for the fine-boned sire; I will take care of the quality of that bone after I get it. I want the hog that has good hams and good shoulders, the hog that has a tapering ear—I am speaking of the Poland China breed. I want a hog with good length, but if I must choose between width and length, I would rather have the width. The sow must be fed right while she is raising her litter. Corn makes heat and energy, but it does not make bone and muscle. We must feed those things that are rich in protein, which makes animal growth—such things as skim milk, clover hay, cottonseed meal, linseed meal and so on. That will suit you here very well for you are not such great corn producers as we are. We are apt to put too much corn into the swine where there is so much of it. The result of such a course is that the bones become spongy—the hogs are apt to be attacked by cholera, they fall down behind and stand up forward and can't get up on their feet. This is a matter requiring attention, not only in relation to swine, but in relation to dairy cows, sheep and every other animal on the farm. Now, being in the winter dairying business we have a good deal of skim milk which we feed to the sows, and we always feed it sweet. We feed our brood sows skim milk and wheat shorts; we use some water if we have not milk enough. Sometimes we are wintering a lot of fall shoats, so we may not have enough milk to go round. The brood sows get all of this slop they want twice a day. Our hogs do not get ice water any more than our cows, because it does not pay. We have a fire under the big kettle every day from fall to spring, not to cook the food, for experiment shows that that also does not pay, but to feed the drink warm. We feed also whole oats on the floor or on the clean earth twice a day. We feed that way because we want the sows to get plenty of exercise. They get exercise in picking up the oats and they digest their food all the better. We feed breeding sows corn once a day. Once a week we give a feed of roots—in our case sugar beets or mangel wurzel. Sugar beets are a little the best, and we can raise them cheaply. We do not feed them for growth or for fattening purposes, but because they keep the animal's system clean and neutralize the bad effects of the heating food. We feed roots more often—up to three times a week—as farrowing time approaches.

We have discarded permanent hog houses. I would not advise you to build expensive hog houses, for I think you will become dissatisfied with them. One reason is that disease germs get into the floors and under the floors and into the timbers, and it is almost impossible to eradicate them. It is most important that the hogs should have sunshine and exercise, and it is difficult for them to get enough of these in expensive permanent hog houses. We have an expensive house we built some years ago, but we make no use of it now except as a feeding place and to keep sires in. We use a pen that costs about five dollars. We make a platform eight feet square, using 2x4 for sills. On this platform place a floor of boards one foot wide and eight feet long. That makes a floor eight feet square. Now take boards a foot wide and 16 feet long, and saw them into even lengths. Make a roof of these, using 2x4 for a ridge pole. The building has no perpendicular sides, the roof acting as the sides also. Batten the cracks. Put a door at one end 2x3 feet, hanging it at the top so that it will swing out and back, so that whether the hog is out or in it may be always closed. Leave a space of four inches under the door. Over the door put in a large pane of glass to let in the sunlight. The eaves, as we might say, make a perfect fender; that is, the old sows can't get down into the corners, but the little pigs can. All that is necessary is to put a piece 2x4 or 2x6 across the end furthest from the door, and the pen is fully fendered. The little pigs will run clear round the outside, and when the old sow lies down she cannot lie on the little pigs. This pen can be used in special cases as a breeding pen by tipping up one side and placing a stone or block of wood under it to keep it in position, with the floor slightly inclined. The sow will never lie down with her back down hill. A rail can be placed across the lower portion of the pen and a portion boarded up so that a narrow alley is left the long way of the pen. The sow will lie down with her back up hill, her udder will extend under the rail and the little pigs will reach under the rail and suckle the dam, while the dam has no chance of overlying them. Two men can lift one of these pens. We place a stone boat under it and haul it to any part of the farm we wish. One year we take them down to the clover field, and next year that is plowed up and the pens are removed. Then in winter we draw them back to the yard, and there they are used for sleeping pens. Sometimes we winter over a large number of September shoats. It is not wise for everybody to do the same. We have plenty of skim milk in the winter. Then, if we can be ready for the July or August market, we strike the best market of the year. The fall market, with us, is the worst of the year, for the Chicago packers are on the market with both feet, stamping the life out of prices. If we can get large growth before the cold weather sets in, then, by careful handling in the winter, we can put the hogs on the market early when prices are remunerative. I come back to the sow again. When the little pigs are born, don't feed the sow anything for three or four days, except a thin slop. If you feed her more than that she will have more milk than the little pigs can take, and there is danger of cake in the udder. Besides, you may cause indigestion on the part of the young. When the little pigs begin to take all the milk from the sow, start to feed. As soon as possible, we teach the little pigs to drink sweet skim milk, and then we feed both dam and pigs all we can get them to eat, largely of material that makes growth. We feed corn always once a day—soaked; we never grind the corn. We wouldn't draw it to the mill and back if the miller would grind it for nothing, unless something should prevent us from soaking it. We never wean the pigs. Let the sow do that. We frequently have seven or eight pigs sucking the old sow when they weigh 80 pounds each. They don't get a great deal of nourishment—that is proven by the fact that the sow increases instead of decreases in flesh. We aim to have the sows increase in flesh when they are suckling. But the little nourishment these large pigs get from the dam seems to do them good. The pigs do not know when they cease to depend upon the sow for their living and begin to depend upon us, so we never have any setback there—that is something we must avoid. If they are weaned at six or eight weeks they never get over it.

Because hogs will eat almost anything we feed them it does not follow that it is well to feed them all they will eat. They are great assimilators of good food, good utilizers of the products of the farm. I have spoken of our friend Theodore Lewis, and I want to give you his receipt for hog medicine, one that I have used on my farm for many years. Take five bushels of charcoal and break it up fine, then two or three bushels of wood ashes and a pound of copperas dissolved in salt water. Wet the charcoal thoroughly with water. Sprinkle the copperas water over the charcoal and mix in your ashes, and three or four quarts of salt. Each particle of charcoal becomes coated with copperas and a little ashes and salt stick to it. Place the mixture where the hogs may help themselves. A good plan is to put it in a box with a cover that they can raise and that will fall down when they don't want any of the medicine. When we feed heavily we find that the hogs eat a great deal of this mixture. It keeps the animal free from intestinal worms, free from cough, and we are not troubled with hog cholera, owing, as we believe, to the effect of this medicine and the movable pen. Also we frequently mix up a batch of mortar and let it harden. They will work away at that. You know swine sometimes tear apart brick walls to get at the mortar.

It is sometimes complained that hogs do so much injury by rooting. The hog does not root for fun—he is looking for something to eat. If we can supply him he will get over this bad habit of rooting. A point we should remember is that it is the young animal that gives the best return for the feed he gets. Many experiments have been made, and, speaking generally, they show that a hog weighing 100 pounds will neither gain nor loss if he is given 1½ pounds of feed a day. Take the same hog after he has been raised to 200 pounds, and it takes 2 pounds of feed per day to hold him at that weight. Run him up to 400 pounds, and he will take 4 pounds a day and show no gain for it. At 600 pounds he will take 5 pounds and not gain. So you see it is the young hog that pays. When the fattening period arrives we never shut the swine up in close yards or pens, but give them the run of the clover pasture. We think we are doing well when we make from twelve to fifteen pounds of pork from a bushel of corn or its equivalent in other foods. If I had a bushel of corn and wanted to make twelve or fifteen pounds of pork with it, I would buy ten or fifteen cents worth of skim milk and some corn and shorts. In order to get the best out of your forty-cent bushel of corn you must make a combination—one kind of feed will not give the best results. Ash makes bone. If you were to burn 100 pounds of corn you would have 1½ pounds of ashes left; from 100 pounds of oats you would have 3 pounds of ash, and from 100 pounds of bran or clover hay 5 pounds of ash. So you see we are not making much bone when we feed corn. Prof. Henry, in his experiments, took a litter of nine pigs and divided them into three equal lots. The first he fed on corn and water; the second on corn, water and wood ashes, and the third on corn, water and skim milk. The first lot made the most rapid growth for some days, and did remarkably well, but soon began to assume the shape of old hogs, their jowls dragged on the floor they were so fat, and they were weak and could hardly keep their feet. The second lot did better, and the third better still. The pigs were all killed, and their thigh bones taken out and tested for their strength on a machine for the purpose. The thigh bones of the first lot required a weight of 300 pounds to break them; the second 700 pounds, and the third as much as 1,200 pounds. That was a valuable experiment, for it goes to show what is the matter with hogs we so often see; when they have reached a weight of 200 or 250 pounds they cannot get up behind. You can always make a good quality of bone by paying attention to what you feed your hogs. We do not try to simply increase the weight of the hog regardless of what it costs us. We are trying, simply as a matter of dollars and cents, to get the best returns we can from the feed we give. There is often a rivalry among farmers to increase the weight of their hogs, and jealousy is excited by one advancing more rapidly in this respect than another. The fact that a man has made a heavier hog than his neighbor does not prove that he has done better—the cost of production must be considered. We cannot control the market end of our business; that is beyond us. But we can improve the quality of our hogs and lessen the cost of getting them to market. The other day, at one of our institutes, I was talking dairying and urging the farmers to feed their cattle better. A gentleman rose and said that if he could get more for his milk he could afford to feed better. He looked at the wrong end of his business—the market end. We can control the home end of our business; we can reduce the cost of production. In that way a man's success depends upon himself. I think I have told you everything I know about the hog, but there may be some points that I have overlooked. If so, I hope you will put in your questions, so that if I have the information you want I may be able to give it to you.

Mr. DILLON: At what age do the pigs leave the sow generally?

Mr. EVERETT: We have sows that suckle pigs three months. Usually at ten or twelve weeks scarcely any of the pigs will be suckling.

Mr. HUNTER: Do you consider these cheap board pens sufficiently warm to keep hogs in cold weather such as we have here?

Mr. EVERETT: I certainly do, and I may say a word further about these pens. I spoke of having a swinging door on the pen. If the pens are battened we usually find them too warm with these doors on, so we take the doors off. But when the thermometer goes down, as it sometimes does with us, to thirty or forty degrees below zero, we put on the doors and close them up. We do not want to keep swine too warm. Keep them dry. Never let the hogs sleep together in large numbers; never let them sleep in straw stacks. They generate moisture very rapidly, and going out in the cold are apt to contract lung diseases.

A MEMBER: Do you have board floors in the pens?

Mr. EVERETT: In some of them we have. But the natural earth is the best place for the hog to sleep, because there is no chance for the drafts to get under him. But if you use the earth for a floor, arrange the pen so that the water will not run in.

A MEMBER: Do you keep your sire hogs in the pens all winter?

Mr. EVERETT: They have a yard in addition for exercise.

Mr. BLANEY: Do you use bedding?

Mr. EVERETT: Yes, changing it twice a week.

A MEMBER: You say you feed your corn soaked. Theodore Lewis advises that it should be fed dry. Why do you differ from him? He is an authority, is he not?

Mr. EVERETT: Mr. Lewis is an authority. But our experience convinces us that there is no advantage in feeding dry. We feed a great deal of peas and pea meal, using them both for dairy cows and for swine. Of course, you here grow peas very largely, and they are excellent for swine.

A MEMBER: How about rye

Mr. EVERETT: We have fed some rye to swine, but it does not give us the good results we get from oat and pea meal and wheat shorts.

A MEMBER: How do you feed roots; do you cook them?

Mr. EVERETT: The only thing that we make any attempt at cooking is small potatoes, and we simply put them in the kettle and bring the water to the boiling point and then put the fire out.

A MEMBER: About the breeding sow or sire. You say you prefer width to length. In Chicago the heavy, fat hogs are quoted the highest, but in Toronto they would only take that hog at a scalp price. I would like to know whether the American packers cater for the old country trade. If they do, and if they are right in their prices, the Canadian packers are wrong, for they want the long lean hog.

Mr. EVERETT: I would not be understood as saying that I prefer the short hog to the lengthy hog as such. I want the hog that has got ham and shoulder. He will make as good a bacon hog, and is more profitable to feed.

A MEMBER: What I cannot understand is that the Chicago market, which does not seem to take the same hogs that we want for packing for the British market, is 50 cents higher than the Toronto market.

Mr. EVERETT: I cannot explain that. A great deal of the pork packed here and exported to Britain is imported into the United States as English bacon.

A MEMBER: How do you manage to get your breeding sows to give two litters a year when you allow them to wean the pigs themselves?

Mr. Everett: We do not raise two litters from all sows.

Mr. Wooley: I would like to ask if there is not trouble with frozen feed, so that the hogs do not all get the same quantity regularly? Another point. Last night Mr. Gould spoke about getting down to the level of the ordinary farmer. That's what I want the speakers to do. But we sometimes find that the speaker who tells us what to do finds it easy to carry on his farming because he has a nice little income from other sources. I would like to know from Mr. Everett how many head of cattle he keeps, and how many hogs, and what he grows, what it costs him and what are his proceeds? He is supposed to be one of the greatest swine breeders in America. We are not that, and we would like to know how his experience can be made of value to us.

Mr. Everett: I am glad our friend has brought up these points. As to frozen feed, we have very little trouble from that cause. We feed with care and watchfulness, catering all the time to the hog's appetite. We would rather feed a little under than a little over and so waste the feed. As to the other point, I own and control the farm on which I was born forty years ago. It is in southern Wisconsin, and contains 220 acres. The land has been under cultivation fifty years. One hundred and twenty acres consists of permanent pasture, which has never been plowed under, and the balance is tillable land. I breed each year about 20 sows, turning off, as I have told you, from 50 to 100 fat hogs, and selling anywhere from 10 to 30 for breeding purposes. I milk 20 cows, carrying on the winter dairy business. I produce corn for the swine, corn for the silo, clover for the cows and horses, oats and peas. We produce a little rye and winter wheat for the purpose of seeding with clover, for we find that if we want to be certain of standing clover we must sow in that way. We follow a four years' rotation, and we go over the farm every four years with a light dressing of manure.

Mr. Wooley: When do you apply it?

Mr. Everett: All winter long, and as late as we can in the spring. When the ground becomes too soft for this purpose we pile the manure up. We apply some land plaster also.

A Member: Are you troubled with long grass manure in spreading in the winter?

Mr. Everett: Not very much. We use in the cow stable the Bidwell stall, the only fastener I could recommend. It is a fastener that does not get very much straw in the manure. But even if we had manure that was strawy I would not hesitate to apply it. We harrow our fields very fine in the spring as soon as we can get on the land. We harrow both ways, and sometimes three times. If we were still troubled with coarse straw we would go over it with the horse rake.

A Member: Do you top dress your permanent pasture?

Mr. Everett: It does not seem to require top dressing. It was originally fertile soil, and that fertility seems to have been maintained.

A Member: Do you water the cows in the stable or in the yard?

Mr. Everett: You will have to apply to Mr. Gould about watering in the stable. We water in the yard, turning the cattle out at ten o'clock every morning for that purpose. They remain out until three or four o'clock, unless it is too cold, in which case they are driven back to the barn.

A Member: Do you salt the cows?

Mr. Everett: Yes; they help themselves to salt when they are in the yard. The salt is kept in boxes. It is better to let the cattle take it than to give it in their feed, for then they might get more than was good for them.

A Member: Are you ever troubled with black death in young pigs?

Mr. Everett: No. That disease is caused by lack of exercise and sunshine. We have never had it among our swine since we used the portable pens.

MISTAKES IN CHEESE-MAKING.

Mr. T. B. **Millar** read the following paper: At this season of the year it would be well for cheese-makers to devote a part of their leisure hours to considering some of the mistakes made in the manufacturing of cheese during the past season. True, every cheese-maker does not make many mistakes, yet almost every one makes a few. It may be that the one who buys the cheese does not find fault with them; he inspects and passes them as all right, yet although there is nothing said about the quality, the maker feels that there is something about certain lots that should be better, and he will set about to find the cause and then to remedy it. That is, he will if he has his own interest and the interests of the industry at heart; and unless a maker has something of this spirit he should quit the business at once and try some other line of work that does not require the untiring watchfulness and attention that cheese-making does.

In pointing out a few of the mistakes that have been made during the past season, I do so with a view of throwing out a few hints on cheese-making that I trust will be helpful to makers, more especially to those who have made these mistakes. In this article I shall confine my remarks to summer cheese-making.

Using Rennet. I take it for granted that all cheese-makers are familiar with and use the rennet test. If not, they should, as it is very essential that every cheese-maker should know just when the milk is in the proper condition for the application of the rennet. To determine this, the rennet test is a very simple and accurate method. All makers admit that adopting the rennet test has been a great stride in the right direction, and the maturing or ripening of the milk before setting is of untold value to cheese-makers. Yet all good things may be overdone, and I must say that this practice of maturing milk has been overdone in a great many instances. A certain class of makers persist in maturing the milk too far before adding the rennet. By doing so they think it will enable them to get out of the factory an hour or two earlier in the evening. This is a great mistake. After maturing milk past a certain point it develops forms of fermentation and bad flavors that otherwise might be escaped The results are that it requires more time to get the curd in proper condition before going to press. During the past four seasons I have made cheese in almost every cheese-making district in western Ontario, and in all my experience the best results were obtained from milk set at about 18 seconds by the rennet test, using 1 drachm Hansen's pure extract and 8 ozs. of milk at 86°. Of course, there are exceptions to all rules, and local circumstances must always be taken into consideration. It is a well known fact that if milk is allowed to become overripe, or develop too much lactic acid before it is set, it has a detrimental effect upon the quality of the cheese, there is a coarseness in the grain or texture, and it lâcks that silky texture and quality so very desirable in all cheese.

Coloring. In coloring, some add the annatto immediately before adding the rennet, and stir both in together. The coloring matter is not evenly distributed in the milk, and the result is mottled cheese. Then the maker wonders what is the matter with his annatto. Add the coloring as soon as possible after you get the weight of milk in the vat, and be sure that it is thoroughly mixed before the rennet is put in.

Coagulation and Cutting. Right here the question arises: How much rennet should be used for 1,000 lb. of milk? I find makers using all the way from 1½ ozs. to 4 ozs. Still, the quantity is not a safe guide to go by, as a great deal depends upon its strength or quality. Yet I find vats of milk coagulating and ready for cutting, varying all the way from 20 to 45 minutes. This is another mistake. We should have a more systematic way of doing our work. Enough rennet should be used to cause perfect coagulation, fit for cutting, in from 30 to 35 minutes. Commence cutting with the horizontal knife, then follow at once with the perpendicular. Begin cutting while the curd is tender, and handle it very carefully, as rough or careless handling at this stage means a decided loss both in quantity and quality.

Stirring. Some make a mistake by turning the steam on the vat as soon as the cutting is completed, and commence stirring at once with a rake, and the way they go at it would give one the impression that they were raking hay, or something that did not require careful handling. After cutting, the curd should be stirred gently by hand (where agitators are not used) for 10 or 15 minutes before any steam is turned on, unless in the case of a fast working curd, raise the temperature gradually, taking about 35 or 40 minutes to raise from 86° to 98°. Continue stirring for 15 or 20 minutes after the temperature has been raised to the desired point, and occasionally afterwards, to keep from matting, until the curd is dipped.

Acid development. With regard to the amount of acid that should be developed in the whey before the curd is ready to dip, ideas are varied and numerous. Some dip with one sixteenth inch acid, or as soon as they can see those fine silky threads on applying curd to the hot iron, while others would not dip with less than a half inch, and often develop three-quarter inch, but they do so at the expense of quality. It is a mistake to go to the extreme, either one way or the other. The best results are obtained with from one-eighth to one-quarter inch acid, and I would not advise using more than one-quarter inch acid at any time. Some claim that in case of a bad flavored curd it is an advantage to develop more acid before dipping; they pile it up in the sink as deep as they can get it, and leave it there for hours before milling. At this stage it has developed anywhere from 2½ to 3½ inches acid, according to the hot iron test. After milling they will turn it over a few times, then cover it again, and keep it covered until salted. This is a decided mistake. The longer the curd remains in the whey the stronger the flavor becomes. When a bad flavor is developed in the vat, draw off the bulk of the whey early, dip curd with little acid, and keep it warm until it is ready for milling. If you have not proper means for keeping curd warm in the sink, it is advisable to raise the temperature 2° higher just before dipping. This will help to maintain the heat at the desired point, about 94° or 96°. Turn the curd frequently, and mill when it becomes velvety or flakey, and will show about 1½ inch acid. Give it a good deal of stirring. Air and mature well before salting.

Salting. Use from 2½ to 3½ lb. of salt per 1,000 lb. of milk, varying the quantity in proportion to the percentage of moisture in the curd, and by all means use some brand of dairy salt. Do not use common barrel salt on any account, as some of it contains ingredients which are anything but beneficial to the cheese. Allow the salt to dissolve before putting curd to press, and see that the temperature is not above 85° at this stage.

Hooping and Pressing. After putting the curd in the hoops do not be in a hurry to apply the pressure. Some practice putting the full pressure on as quickly as possible, using a lever three or four feet long for that purpose, keeping them at high pressure mark for 10 or 15 minutes, then take them out and bandage in a haphazard way and into the press again, paying very little attention to the style or finish of the cheese. They do not turn the cheese in the hoops in the morning, but have them taken to the curing room at once and placed on the shelves. There you may find them all shapes and sizes, medium, little and big, with straight and crooked shoulders, with bandages pulled down off the corners and wrinkled on the sides, yet hardly any two of them alike. From their appearance one might easily be led to believe that they had been specially prepared for a variety show. In the first place, it is a mistake to apply the pressure so quickly. This should be done very slowly at first and gradually increased until the full force or pressure is applied.

Bandaging. It is a mistake to try to bandage cheese in 15 or 20 minutes after they have been put in the press. They should be left in the press at least 45 minutes before bandaging. Pull the bandages up neatly, and try to have about an inch of the bandage to lap over each end of the cheese. Use a double set of cap or end cloths, so that one will be left on the cheese until a perfect rind is formed. Turn the cheese in the hoops every morning, and trim off any shoulders that may have been formed during the night, then put back to press for some hours before removing to the curing room.

Cleanliness and Neatness. I would like to impress upon every maker the necessity keeping his factory clean and tidy. No matter what the quality of his cheese may be, unless he is clean and neat, he cannot be rated as a first-class maker.

The convention then adjourned until the afternoon.

SECOND DAY—AFTERNOON SESSION.

The PRESIDENT: One of the speakers last night talked about the necessity of getting down to the farmers. On behalf of the Directors I may say that our difficulty has rather been in getting up to the farmers—that class, at least, who attend these conventions. And so with the speakers, I believe. The man who is to get up to the farmers who attend these meetings must know what he is talking about. And that is the reason why, in making up our programme, we arrange to have each subject taken charge of by the best specialist on that subject that we can find. The way you ask questions shows that you expect the speaker to be thoroughly acquainted with his subject. I am glad to be able to introduce to you now one of the very best of the able speakers at this convention, the gentleman who delighted us last evening—Mr. Gould.

CARE OF THE DAIRY COW.

Mr. GOULD: Though I am not an old man, even within my lifetime the care of the dairy cow has developed from no care at all to what may not unfairly be called hot-house culture. I have engaged in dairying 51 years, and that's just as many years as I have lived.

A VOICE: What did you do the first year?

Mr. GOULD: I ran a hand separator. (Loud laughter.) Within my life I have seen this cow taken from the pasture and the woods, and with all the skill of the breeder and the dairyman transformed into the thoroughbred, fully adapted to the needs of the dairy. Her home has become a palace, her food has been chosen and adapted for her use, and to day we are here discussing what we shall do with the produce of this cow. The treatment of the cow has changed from the time when we turned her out on the pasture in the summer and in the fall braced her up against fresh air preparatory to the next season's dairying. In those days we had nothing that we could count definitely as profits. Since then the industry has developed, and last year the United States produced $670,000,000 worth of dairy products, or $50,000,000 more than the whole of our bank-capital. And Canada produced I don't know how much, but the export alone is stated at from $15,000,000 to $17,000,000. And what was this old-time dairy? I need not tell these gray-headed men here what it was. It was simply a matter of luck how things turned out. When luck was with us we said dairying was profitable, and when it was the other way we had no remedy. The cow was bred for nothing in particular, and when she had eaten her feed she didn't know whether to make it into milk or into beef, but generally she was compelled to use it for self-support, so that there was very little of anything left for us. When the grass was good and the cow could get more than she wanted for her own support we said she had done pretty well, but when the feed got short and the frosty nights came, and the cow could not get more than enough to support herself, she ceased to give milk We had mowed the old meadows with a hand-scythe, and we gave the cows the benefit through the feed-rack. I remember that feed-rack, and I wished that feed-racks and cows had never been invented. The moment winter came every man dried off the cows because if they gave milk it would cost all the more to keep them. We turned them out into the woods and meadows and fed them hay. Next spring we began to find calves in the snow. Then we began dairying, and some of us sold a little milk to be made into filled cheese, and some of us sold cow hides. Then the cow had the spring grass, which should have made milk for us, but most of which she used to recruit her strength after the hardships of the winter. If the cow got on her feet by the first of June and began at that time to give us a good mess of milk, we were satisfied. The cow would give milk for five months and go dry for the other seven. By-and-bye we began to ask ourselves, "Why can't this cow give us milk for a longer period; why can't she give milk in December as well as in June?" We began to find that the reason she did not give milk at certain times was that we did not give her during those times summer conditions and summer feed. The moment a man saw these things the evolution of the dairy cow and the dairy barn was begun. The dairy cow should never seek her own support, the support of the cow should seek her. When we get this thoroughly into our own minds we are on the high road to successful dairying. The profitable cow cannot carry on the struggle with nature, for every time she has to struggle against cold or hunger she gives less milk. You remember the old-fashioned dairying with the brindle cow. The cow struggled with nature, the man struggled with the cow, and both of them struggled with fate. The man had generally a little the longer life, and he lived to see the hide of the brindle cow stretched on a pole. We want to stop that struggle; there must be no doubtful issue in this business. The cow must be fed and housed, if necessary, the year round. I have come to believe that we must introduce soiling more generally, and that from the first of June to the middle of July is the only time when the cows cannot be allowed to earn their own living. For ten and a half months it must be our business to see to it that they have full rations to make milk—not beef—and then we get into all-the-year-round dairying. We used to be wards of the cow; now she must be our ward. The cow takes no thought for the morrow; the dairyman must take thought for the morrow on the cow's behalf.

Now, what is the first thought for the morrow in all-the-year-round dairying? One thought is that the cow shall have food adapted for her in the work she has to do. June grass is the natural feed of the cow at her best. We cannot give her pasture grass all the year round, so we are forced to go to the chemist to find out the character of this best food for our cow and then look about and see if we cannot get a ration that will take the place of it. So we get down to scientific feeding. The better the cow the more complete her dependence upon us. Did you ever think of it, that the old brindle cow took care of herself pretty nearly. She was ready to fight nature or you at the drop of the hat. And no matter which won the result of the struggle was against you. The moment we got the cow bred for the dairy we found ourselves in charge of an animal of less hardy constitution than old Brindle, one of more open form and more nervous temperament—in fact a cow that had to be taken care of almost like a baby. We had to have feed and environment adapted to the dairy cow, for we had a cow that was putting her strength into the milk-pail instead of into the struggle with nature. Every man has his own opinion as to the care of a cow. If I were to ask an expression of opinion from members of this audience I should find that nearly every man here had a different opinion from his neighbor. And if I could see you at your homes I should probably find that many of you had a practice far different from your opinions. But the object is the same—to cause the cow to put the most human food in the milk pail without unduly impairing her constitutional strength. One man wants the cow to have plenty of exercise outside, another man goes in for hot-house culture. But if we take a middle course I think we shall get the most out of our cows in proportion to what we expend upon them.

The question arises what kind of a cow does the dairyman want to care for. Last night I said something which seems to have been slightly misapprehended by some of you. What I said was that the old brindle cow was as good as any other if she gave as good a return in milk as the other. But such a cow is a "sport," and her calf is always a failure, for she has no heredity to transmit to her offspring.

A Member: What is a "sport"?

Mr. Gould: Have you ever seen a president come out of a family the other members of which didn't know enough to come in out of the wet? A good cow may have no heredity, no breeding; such a cow is a "sport." I recognize the value of breeding, whatever the purpose may be. I do not advocate any particular breed. If I were to say the cow must be a Jersey, all those who did not favor that breed would get mad and say I had come here to advertise Jerseys. If I were to speak in favor of Holsteins, some of you would say "Don't talk that stuff to me; we couldn't raise enough in Canada to keep a herd of Holsteins." But I say that if we are to have dairying, we must have a dairy form and type, and I leave the other fellow to name the breed. If I adopt the Jersey, or the Guernsey or the Holstein or the Ayrshire, I have the dairy type and form. What I wanted to say last night was that if a man had dairy judgment he would know that form wherever he saw it. Keeping this form in mind I bought three cows for a hundred dollars that yield me good results. If a farmer can pick out a good dairy cow in that way he can get started without enormous expense. If you lived where I do you would want a cow that would give a good, large flow of well-balanced milk for the city trade; if you lived in southern Ohio you would want Jerseys, for they are in the creamery business down there. If you were in the north you would want Ayrshires, which give a good, balanced flow for cheese. If you get a good dairy cow, one that suits your circumstances and your trade, get a well bred sire and see if you cannot progagate these excellencies. Save the nice heifer calves. Here is where we farmers make a great mistake. We keep on bringing in fresh influences from outside, and our dairies are a mixed up mess of antagonisms. Let us retain the sire right in the herd—a strong, vigorous, well-developed animal—and let us breed him to the second and third generation. Bob Ingersoll says that if he had had the making of the world he would have made health catching instead of disease. If the sire has a vigorous constitution he will transmit his health to his offspring just as readily as a diseased one will transmit his taints. After three generations we have the characteristics we want intensified. Now, let us go outside and get another family of strong tendency on milking lines, and we shall find our brindle cow of the hills and plains transformed into a good dairy animal of strong prepotency. They tell me that this is inbreeding. I say no—it is line breeding. Inbreeding is the incestuous mixing of brothers and sisters, uncles and cousins. But all I ask is that when we have got a strong breed established, like our friend Ballantyne's Ayrshires, let us not step outside for our next sire and bring in one of another breed entirely. If we bring in Ayrshires this year and Holsteins the next, and Jerseys the next, we get right back to "succotash" again. Do you know how that brindle cow came to be a brindle cow? Simply because there was no preponderating hereditary strain in her. She was a thoroughbred—of her kind—just as the Texas steer is a thoroughbred. We simply bred her down as intelligently by mistake as a dairy cow can be bred up through knowledge. If we simply breed from the best animals along a certain line, throwing out the culls in each generation, we shall do what the best breeders are doing.

How shall we care for this cow that we have bred so carefully? My friend Febringer, finding the neighbors all buying thoroughbred cattle, invested in a fine shorthorn heifer. He took it to the fair, but while all the other exhibitors were active in giving the pedigree of their animals and showing them off to the best advantage, Febringer simply stood in his stolid German fashion, holding the halter by which he had led his heifer to the grounds. He got no "bremium," as he called it, and returning home disgusted, turned his heifer out into the fields and she became a scrub in five years. We must not wait for our "bremium" in this dairy business, but we must care for our cattle and make sure of the prize. The milking cow's function is the mother function, and that can best be carried on in a certain round of uniform conditions. The man who establishes the best conditions and maintains them most uniformly is going to get the best results. I spoke of "dairy form," and as you are readers of our dairy papers, no doubt you know what that is. You know that if animals are bred and fed for certain purposes they will develop certain peculiarities. Milk in a cow is allied to speed in a horse; beef is allied to draught in a horse. Many are trying to get speed and draught at the same time. We must keep these apart, so that the animal we use shall be bred and fed to give us milk pretty nearly the whole year round. If the cow dries off too soon she will put on flesh. But we do not want that, so we should feed her on the cheapest food that will keep her in health, and save the better and more expensive food for the time when she is giving milk again, so that we may get the best return from it.

When should the training of the dairy cow commence? About six years before she is born. Ten years is better, and twenty years better still. Milk-giving, though the first thing, is not the sum total of what we demand of the cow. There are habits and temperaments to be considered which, if they are right, help to make the cow valuable. We get those by heredity just as we get the milking qualities by heredity. In the old-fashioned dairying the heifer had to be taken out to the woods and put through the initiatory process of breaking. But a man's character need not be put in jeopardy if he will begin ten years beforehand to breed dairy habits and temperament into his cattle.

By taking such a precaution he don't have to go to prayer meeting for three years after breaking a heifer in order to catch up. But we can begin the active training of the animal herself if we begin to have her run with the cows about three months before she comes into the dairy. Drive her up with the cows, and let her have her stall in the barn, and make that her home forever. Tie her up, give her a little mess of meal, and so get her into the habit of coming into the barn from choice because she has a friend there who is better to her than anybody else. Handle her quite a little. I don't care if you go so far as to handle her udders a little, too.

When the calf is born never let it suck. Somebody will say I am going to destroy the maternal instinct of this heifer. Put the calf up to the mother's head and let her fondle it; let her have the first lick at it. If you let the calf suck for five or ten days you centre the maternal affections upon that calf. If I milk the heifer she never knows there is more than one way for her to give down her milk, and in two days she has practically learned to leave that calf alone and centre her affections upon me, and for all practical purposes I become her calf. Let the calf suck, and the mother won't give down her milk to you. Then that heifer has to be broke. You tie her feet together, with a rail across her back and milk her into a tin cup. And then you go into the house and put salve on yourself. Besides, the heifer treated in the way I advise will give you twenty per cent. more milk the first year than she will if her calf sucks a week. Another thing. You know a heifer tries to dry off at three months. Her grandmother had that peculiarity and her great grandmother had it, and when you get back to the original cow in the garden of Eden, she was not milked at all and dried off at three months, just as the Texas cattle do to-day. When this critical time comes we want to have the right feed. Have her come in in the fall, and have abundant stores of peas and oats instead of buying so much cottonseed meal and linseed meal. Bridge her over this three or four month's time by feeding her well, and get her to milk at least ten months in the year. That establishes the period of milking at ten months. She has learned to like the barn because she is comfortable there and gets good food there, and she learns to like us because we are kind and gentle with her. I do not say we must love a cow, but we must have a dairyman's affection for her. I would not breed this heifer to come in again as quick as possible. I would not have her come in again for sixteen months. I want her to learn the milking habit, but I want her also to develop some bone and some size, for then we shall have a more hardy animal. After the second time this is not so material.

Now as to this care of the cow, I think that very largely we should be winter dairymen. While the winter is on make butter, and at the two ends of the season there will be milk enough for the cheese factory. Have the cows come in in the last weeks of August or the first weeks of September. I have my peas, oats, sweet corn and roots, and when it comes to winter I have a uniform feed all through the winter, and when May comes my cow freshens up and goes on for ten weeks, giving practically as much as my spring milkers.

Now as to the stable. The object of having a stable should be to give the cow 365 days of summer in the year. Dairying is profitable in the summer. If we can bring about such conditions as will make it profitable in the winter, we make an all-the-year-round profit. I am radical on one point. I don't think I ever saw a stone stable that I would put cows into for an all-winter's job. One in ten of them may be all right, but the other nine are not. Some are damp, some are dark, some are chilly, and nearly all cause a feeling of clamminess to pervade the whole dairy. I believe the cow is better according as you make her stable light and warm. The cow knows what is good for her in these respects. I have seen cows, when they were let out, walk right off down to the neighbor's. The stable you want is a wooden stable with double walls and an air space between the two, and as light as this hall. Why do we want the light? Because we are trying to get a summer condition. I would like to have seventeen hours of sunlight. Of course I can't get that, but I want to get as near it as I can. Other things being equal, a light stable is drier than a dark stable, and so it is freer from foul smells and disease germs. Another thing, do you know that a dirt floor in the barn is the perfection of floors for the cow? It is only a question of making it dry and keeping it free from mud.

There is no frost coming up through such a floor; there are no cracks for the wind to blow up through, and for the fertility to run down through. Of course we want to make our cows comfortable. I don't know that any man in this audience has the idea that a cow can't be comfortable unless she has her head between stanchions. If there is such a man the best way I know of for him to get rid of that notion is to put his own head between stanchions and stand there for four hours. There is only one nice way to tie cows—either singly in a half-box stall or two in a big stall, and tied with some form of halter. My friend here (Mr. Everett) talks about the Bidwell stall. That is all right, but there is a duty on that, and I am just Gritty enough that I won't pay any duty. You say the dirt floor is going to get muddy. No, it isn't. Don't make the gutter too big. A foot wide and eight inches deep is enough. Dig a trench big enough to receive a wooden trough of those dimensions and fasten that wooden trough in with cement. Then put a heel plank fourteen inches wide inside the gutter, towards the manger for the hind feet. What are we going to floor it with? Go out and cut turfs a foot square and two inches thick. Lay them bottom up where the cow is to stand, then put on others so as to cover the cracks, and then put on a third lift and you have the best imaginable floor.

Another thing is water. If we are to have all-the-year-round conditions of dairying we want to have the water in the winter about the same. The water in the creeks is about 50 degrees colder in the winter than in the summer. Some say it is all right to turn the cows out to water in the winter. I say a cow does not want to be turned out. If you think she does, open the barn door and see. How shall we water them? We water them in a trough in front. The cows drink when they want to, and as much as they want to. When they are turned out to water they are supposed to drink twice a day. But sometimes they don't want to drink just when they are turned out, and the next time they make up for it. So the cow that has skipped a drink takes a hundred pounds of cold water into her stomach. And pretty soon you say she is the tenderest cow you ever saw, and you believe she will die before spring. Is the cow not to get out at all in the winter? My neighbor said the cows would die if they were not turned out. None of them have died yet. You say the cow's offspring won't be healthy if they don't get exercise. These cows are not coming in in the spring—not until next fall—and between May and September they can get about all the exercise they need for the development of the calves. If they are to come in in the spring I admit they want a certain amount of exercise, but, at the same time, that exercise costs us milk and feed. This all-the-year-round care of the cow is getting to be at the basis of our success as dairymen, and to it we must devote our attention. When I was about twenty years of age I thought I was cut out to be a second Horace Greeley, and so the natural thing was for me to go to the nearest newspaper office and start in to become a great journalist. I got a position as reporter on the Cleveland *Herald* at $6 a week and board myself. One day the editor sent me up to Euclid Avenue to report a funeral. It was an important affair and the editor told me to take all the space I wanted to report the service; to give the prayers if I could get them. One of the funeral wreaths bore the inscription, "No cross, no crown." When the paper came out I found the printer and proof-reader had made me report that part of it "No cows, no cream." (Laughter.) That was my first dairy article. I saw at once that I was intended for a dairy journalist. I resigned my place and took to writing articles on dairying in the *Ohio Farmer*, and I have reached the culminating point in my career in being invited to come here and talk to Canadian dairymen.

Mr. WOOLEY: Please give us particulars about your stables.

Mr. GOULD: My barn is an "L," running to the south from what was the original barn. The "L" is 32x42 feet, and furnishes ample accommodation for 24 cows. It is built with balloon frame on 2x6-inch studding. It runs north and south, and has windows on the east, west and south. It is lined up with tar paper and cheap flooring. The outside is common matched lumber. Overhead is the floor of the loft. I was laughed at for making this so high as it is. I said that each cow ought to have 500 cubic feet of air to stand in; that is a space 16 feet long, by 3½ feet wide and 10 feet high. If you are keeping cows all the year round in the barn you are going to have foul odors unless you are very careful. How is this to be prevented? Having an earth floor is half the battle. Then clean the stables twice a day. What shall we use as absorbents? Use the horse manure from the other part of the barn; there is nothing that will so perfectly absorb the liquids as horse manure. What shall we deodorize with? Some say land plaster. That is very good, but it costs $7 a ton, and that makes a pretty dear deodorizer. When you live in a country where the clay comes up to the third rail on the fence, as I do, you can get road dust pretty cheap. So we put in about twenty barrels of road dust at a time, and each time the stables are cleaned we use from a peck to half a bushel to scatter on the heel planks and in the gutters.

A MEMBER: Where is your silo?

Mr. GOULD: We turned the old big barn into a place for silos and grain bins. The silos run the whole height of the barn—24 feet.

Mr. EVERETT: Can you absorb the nitrogen with road dust?

Mr. GOULD: Yes, sir. I was told I could not do it. What is the test? We are told that geraniums will not live where there is an excess of nitrogen in the air. My wife's geraniums are being wintered in the barn, and as healthy looking a lot of geraniums as you would want to see.

A MEMBER: How do you keep up the supply of fresh air?

Mr. GOULD: The warm air, which you want to keep in the stable, rises; the air which is going to do the damage, and which, therefore, you want to get rid of, falls. At one end of the barn we did not fill in between the studding, and so we have four flues. Holes are cut so as to let the bad air out, while other holes at the top let the good air in that way. So we get a circulation of air, yet there is no perceptible draft.

A MEMBER: Keeping the cows tied up that way. Don't you think they need exercise?

Mr. GOULD: It will not do to judge the cow by human beings. If a cow is comfortable she has fulfilled all the desires of her heart. What is comfort for the cow would be prison for us. Give a cow fresh air and plenty to eat, and all the exercise she needs she can get in chewing her cud. Turn one of my cows out and leave the door open, and she will be back in her stall in three minutes by the watch. Half an hour in the open air for the cow costs us milk, and I can't afford to give milk for any such purpose.

A MEMBER: When do you want your heifers to come in?

Mr. GOULD: I try to bring them in in the fall. I want my calves in the fall. Then I can take care of the heifer better in the winter than in the summer. I can give her more uniform treatment. Summer is a succession of heat and cold, and flies and grasshoppers. But in winter I can control the conditions better, so far as the heifer is concerned.

A MEMBER: How old ought the heifer to be when she comes in first?

Mr. GOULD: I think the best age is about 24 months.

Mr. EVERETT: Some of our veterinarians claim that tuberculosis is promoted by too close confinement. Is that so?

Mr. GOULD: I have been through the tuberculosis district, and from all I have been able to find out I have come to the conclusion that there is no more tuberculosis now than there was ten years ago, or forty or fifty years ago. Some of the worst infected herds of New York have been made up of cows that had the most outdoor exercise. I have the idea that there is a tremendous sight of unnecessary outcry about tuberculosis. It seems to me that somebody wants to make some money out of the scare.

A MEMBER: Is there a way of picking out a good milking cow from any herd?

Mr. GOULD: There is; but that would call for a whole lecture in itself. The whole thing comes down to this—milking goes with feminine form, so never buy a steer for a cow.

A MEMBER: What is a good average yield per year for a cow?

Mr. GOULD : I have here a photograph of part of my herd. They are of such nervous temperament that when the artist put his head under the blanket to get ready to photograph them, most of them left in a hurry for the upper lots. But these cows were bought on my judgment from herds going east to New York. Last year, in twelve months these cows averaged 6,100 pounds of milk each.

A MEMBER : What is the earliest soiling crop with you?

Mr. GOULD : Peas and oats, these we put in, in the spring.

A MEMBER : How much to the acre?

Mr. GOULD Two bushels to the acre and then plow them under four inches deep, and a bushel of oats broadcast to the acre. But I varied that lately by sowing six quarts of corn instead of the oats, and so I stalked the peas up.

A MEMBER : Do you feed any ensilage in the summer time?

Mr. GOULD : If I have any left over I do. I think we shall find that some of our best summer soiling crop is some that has been left over. We can keep it very successfully now.

A MEMBER : Do you know anything about Russian beans?

Mr. GOULD : Unfortunately I know just enough to be sure that I know nothing. Last season I was up in the north end of Maine—within two miles and a half of the Arctic circle, I guess, and I found the great question in that country to be the means of avoiding the heavy cost of importing western grains. A ton of bran up there cost $32. Up in the town of Andover they are raising Russian beans. They are a good grower and produce from 50 to 75 bushels of beans to the acre. The dairymen feed them instead of cottonseed and linseed meal, and they say they are just as good. I did not think enough about the matter to get the facts while I was there. But I wrote an item in *Hoard's Dairyman* about Russian beans, and ever since I have been doing a rushin' business on it. But there's going to be half an acre of them on my farm next season, so I expect to learn something about them.

A MEMBER : Have you ever tried clover for the silo?

Mr. GOULD : We tried it, but it was not satisfactory. There is more nitrogen in clover than in corn and it requires more moisture to keep it. Give it more water—five pails to every ton.

Mr. BALLANTYNE : I am afraid that Mr. Gould's answer with regard to tuberculosis may give what I would regard as a wrong impression. I do not understand that veterinarians hold that the disease is conveyed from one animal to another in some incomprehensible fashion, but that it is a germ. I think veterinarians who have given close attention to the matter, have come to the conclusion that inbreeding has had much to do in spreading the disease by producing animals of weak constitution. It was my pleasure, during the past season to talk with a gentleman who had devoted seven or eight years to the investigation of tuberculosis, and he said he had come to the conclusion that in order to contract the disease, the animal must inhale the germs. So long as the saliva is in a moist state there is no danger, but when it dries the germs are freed and the disease can be communicated. How is it, then, that one animal will escape, while another no more exposed to the disease, will contract it? Just as one person waiting upon a consumptive patient will escape the contagion, while another will be taken down—in one case there is no predisposition to the disease; in the other there is. I do not know that tuberculosis is more prevalent to-day than formerly—I do not know that consumption, which is nothing more or less than tuberculosis, is more prevalent now than before. But it is only since Koch's discovery that we have been able to diagnose the disease with certainty.

Mr. GOULD : But I find that discoveries of tuberculosis always attend the travels of the men who want to win reputation by discovering it. The veterinarians themselves, so far as I have been able to learn, are not agreed as to what tuberculosis is. Until the doctors and the lawyers can settle upon some points of agreement as to what the disease is and what is to be done about it, I don't think we, as dairymen, need be alarmed about it.

Mr. Everett: We have had a good deal of this disease in our country. Some herds have been slaughtered in Wisconsin and some in Minnesota. The concensus of opinion among our best veterinarians is that the disease is promoted by close confinement of the cattle, bad ventilation and inbreeding. No longer ago than last week I was attending the State Agricultural Meeting at St. Paul, and the State Veterinarian made an address upon the subject. At our own Station our herd has been slaughtered, and every one was found to be tuberculous. Our veterinarian and our bacteriologist held that the causes I have given contributed to the spread of the disease. Mr. Gould, you will see, has high ceilings and wonderfully good ventilation. With close confinement and bad air we are sure to have more or less tuberculosis.

PAYING FOR MILK ACCORDING TO FAT.

Prof. H. H. Dean, of the Ontario Agricultural College, Guelph, delivered an address upon "Paying for Milk According to Test," a report of which will be found in the proceedings of the Eastern Dairymen's Association, where the matter had also been presented.

Prof. Robertson: The question of paying for milk at the cheese factories according to its true value is a live question, and every man who can contribute anything to our knowledge on the subject ought to do so with modesty, sincerity and fairness. Therefore I speak. I am very glad that my friend and former pupil, Prof. Dean, has done so much good work. I think Prof. Dean reflects a great deal of credit upon his former teacher. In stimulating thought, Prof. Dean has done capital service to the farmers and dairymen of this province. He entered upon a field with which he was not quite as familiar as some of us when he began his experiments in cheese-making, and the harshest criticism I shall pass upon his work—and it is not harsh but kindly—is that, entering upon a new field, and as a teacher of the people whose utterances are by many regarded as oracular, he should be very sure he was right before he disturbed any existing method which was an improvement upon what had gone before; and in that I think he made a small blunder—for which, I am sure, none of us will bear him any grudge. I dare say he does not think he has made any blunder.

Well, I want to try to show the dairymen why it is that I regard the payment for milk at cheese factories on the basis of the percentage of butter-fat in the milk as a fair system. For a long time we paid for milk according to its weight alone. But we learned that the weight of milk was not an accurate measure of its value for cheese-making purposes. How, then, shall we get at it? Naturally by dividing according to actual value instead of by actual weight. Herein, I believe, is the weakness of the experiments Prof. Dean has carried on. He has only shifted the difficulty from paying by weight of milk to paying by weight of cheese. But two lots of cheese will differ not alone in weight but in quality; and if only one of these factors is considered, a just solution of the question cannot be reached. But, multiplying quality by weight you get value. Now, in our experiments, multiplying weight by quality (or value per pound) in the cheese gives almost the same results in value, as multiplying weight by quality of milk, as shown by the percentage of butter-fat. In average milk in Ontario—and, mind you, average milk is always imaginary milk—we have 3.5 pounds of butter-fat per hundred pounds of milk, we have 2.4 of casein, .7 of albumen, 5 of sugar and .7 of ash. These constituents are nearly all in solution. But the butter-fat is not in solution, but in suspension. The cheese-maker, by adding rennet coagulates the milk—that is, the action of the rennet takes the casein nearly all out of solution and makes a fine mesh-work which imprisons the little globules of fat. Then by cutting the curd, heating, draining, and salting it, a large portion of the water containing the other things in solution is removed. When the cheese-maker finds left the fat and casein with just the proper proportion of water, he has his curd ready for the hoop. After the cheese-maker has finished his work and put the cheese up in such shape as to be ready for the market, of the 87.7 pounds of water in 100 pounds of milk, he has retained only 3.4 pounds. And that water in the cheese sells for as much as does the fat that is retained. That is, by his skill, or by favorable conditions, the cheese-maker enables the farmer to sell water for about 10 cents per pound. That is perfectly fair and honest. Those who buy that water pay the price willingly. When the cheese-maker has milk containing a large percentage of fat, he can, in the ordinary way of cheese-making, retain rather more water without having a cheese that will go off flavor quickly. Now, it has been said that a larger proportion of fat is lost in the whey tank in the case of rich milk than in the case of poor milk. That is not the case ; the very opposite is the case, the proportion of loss being less in the case of rich than in the case of poor milk. Now, as to the casein ; if the cheese-maker has to use milk that is not in good condition he will find it very hard by the use of rennet to retain all the casein he should. If milk were paid for according to quality it would be brought to the factory in better condition. Now, the cheese-maker will retain 3.3 out of 3.5 pounds of fat, 2.2 out of 2.4 pounds of casein, .2 pounds of sugar, albumen and ash, and with 3.4 pounds of water plus the salt, he will secure from 100 pounds of milk, 9.3 pounds of cured cheese.

Now, another point. We kept account of this matter in the making of about 230 boxes of cheese. We divided the milk of the patrons into three classes—richest in fat, medium and poorest—and kept the record for each kind. We found that a pound of fat did not always represent an equal quantity of cured cheese, but that milk containing 3 per cent. of fat gave us more cheese per pound of fat than milk containing 4 per cent. So far our work agrees with the work done everywhere, except that Prof. Van Slyke's work does not show as much difference in the yield of cheese, per pound of fat, as ours does. Taking 4 per cent. milk as rich milk, we found that the yield of cured cheese per pound of fat would be 2.5 pounds, or 500 pounds of cheese for 5,000 pounds of milk. Milk containing 3 per cent. of fat we regarded as poor milk. Milk of that grade we found would yield 2.8 pounds of cured cheese per pound of fat, or 420 pounds of cheese for 5,000 pounds of milk. In all factories, so far as I know, the cost of hauling the milk and making and marketing the cheese is first deducted, and the net value of the cheese divided among the patrons. Now, 8 cents per pound would be a good net price. At that rate the 920 pounds of cheese made from 10,000 pounds of milk, of the quality of the two instances mentioned, would yield $73.60. If this were divided according to the weight of milk, each of two patrons, supplying 5,000 pounds each of 3 per cent. and 4 per cent. milk respectively, would get $36.80. So the man bringing the poor milk would get more than his share, for his milk made only 420 pounds out of the 920 pounds of cheese. No farmer wants more than his right, or if an occasional farmer does want more than his right I believe the others will be ready, if possible, to prevent him from getting it. If we divide according to the proportion of butter-fat, the man having the richer milk would receive $42.06 and the other $31.54.

We took some pains to ascertain the quality of cheese made from these different grades of milk, and there is where Prof. Dean and I differ. The quality of cheese depends mainly upon its flavor and richness. All judges admit that. And, other things being equal, the cheese made from the richest milk, up to 4 per cent. will have the richest body and the best flavor, and will keep that flavor longest. We examined over 220 cheese of different percentages of fat, scoring them without knowing which was which. We found that for each additional 1-5 of 1 per cent. of fat in the milk from which the cheese were made, we had cheese worth $\frac{1}{8}$ of a cent per pound more. There is thus a difference of $\frac{5}{8}$ of a cent per pound in the cheese made from these respective qualities of milk. Allowing that in the division these patrons—one bringing 4 per cent. milk and the other 3 per cent. milk—would receive $41.50 and $32.10 respectively, so that this man bringing 4 per cent. milk would get 56 cents more if he were paid according to the butter-fat test than he would if paid according to the actual value of the cheese made from his milk. But it must be remembered that in making the cheese from the richer milk there is less trouble, and a smaller proportion of loss ; and it must be remembered also that the better cheese that can be made from the richer milk enhances the reputation of the factory and ensures a better market for the poorer cheese. If a man keeps ten cows he will send an average of 200 pounds of milk a day to the factory, or a total of about 5,000 pounds a month, and the encouragement offered to a man to send good milk is a payment beyond his bare right

—if you choose to regard it so—of 56 cents a month. I believe Prof. Dean has not done wisely in shifting simply from paying by weight of milk to paying by weight of cheese. When he comes to the true basis of value from quality and weight, I am satisfied that he will find the butter-fat in milk furnishes a just basis for distribution. I hope every factory will stand by this system because it is just, and if they do I am satisfied that it will be the means of encouraging all patrons to send good milk to the factories.

The PRESIDENT: Prof. Van Slyke, of Geneva, N. Y., was asked to come and discuss this question. His answer was that he had already addressed two meetings of this Association on this subject, and that there was less urgent reason for him to come again, and, as it was not easy for him to get away, he asked to be excused. But he has sent a letter on the subject of Prof. Dean's bulletin, which I will ask the Secretary to read:

THE FAT BASIS IN PAYING FOR MILK.

Mr. J. W. WHEATON, the Secretary, read Prof. VAN SLYKE's communication, dated January 5th, as follows:

In response to your request that I should prepare a discussion of the proposition made by Prof. Dean in Bulletin No. 95, advising a somewhat radical modification of the fat basis in paying for milk at cheese factories, I send you the following.

I shall confine my statements to the following points:

(1) Is this proposition warranted by facts?
(2) In whose interests is such a proposition made?
(3) What is the immediate effect of such a proposition?

Before taking up the first point, let us consider what the proposed modification is, and what object it is supposed to accomplish.

Suppose two patrons furnish milk containing respectively 3 and 4 per cent of fat, then under the regular fat basis system one would receive three-sevenths and the other four-sevenths of the money received for the cheese made from their milk. The proposed modification would call 3 per cent. 4, and 4 per cent. 5, thus making 9 shares instead of 7, of which one would receive four-ninths instead of three-sevenths, and the other five-ninths instead of four-sevenths. In other words, under the proposed change one pound of fat in poor milk would receive more money than would one pound of fat in richer milk.

The object sought to be accomplished by this change is absolute justice, or greater justice than can be secured by any other system, on the supposition that a pound of fat in poor milk makes more cheese than a pound of fat in richer milk; and moreover that the cheese is of the same commercial value, whether made from poor or rich milk. This proposition is based on the claim that milk poor in fat not only makes more cheese per pound of fat, but that such cheese made from poor milk has an equal if not greater market value than cheese made from richer milk. Now coming to our first point:

(1) *Is the foregoing proposition supported by facts?* On what ground is the claim made that more cheese can be made from poor milk than from richer milk for each pound of fat? The two compounds of milk which are of most account in determining cheese yield are fat and casein. Now it is claimed we shall always find in poor milk more casein for each pound of fat than we shall in richer milk, and hence a pound of fat in poor milk will make more cheese, because it has more casein associated with it.

I have this to say on this point: we have worked for three years on this question, and have carried on over 300 experiments, both at our Geneva Station and in numerous cheese factories. We have carried our work through the entire factory season, and have obtained the averages of many million pounds of milk, produced by many thousands of cows. We have also worked with individual herds of cows. As a result of this work we are warranted in saying that, so far as our New York factory milk is concerned, we find on an average that within the limits of 3 and 4.5 per cent. of fat, the variation of casein from a uniform proportion with the fat is insignificant. While there are marked variations in individual cases, we should do injustice more often than justice by trying to recognize variations from the general rule. The proposed change claims or implies that the rule is always the other way, that poor milk *always* contains more casein for its fat, and it makes no allowance for variations of any kind from such a rule. Granting, however, that the milk produced by Canadian cows is different from that produced by cows in New York, and that in the milk of Canadian cows the richer milk *always* makes less cheese per pound of fat than does milk poorer in fat, how can we justly pay the same for a pound of fat in rich milk as in poor milk?

Under such circumstances *quality* as well as quantity must be considered. If a pound of fat in poor milk makes more cheese than does a pound of fat in richer milk, it is due to the larger proportion of casein contained in the poorer milk. The increased yield per pound of fat is due to an increased amount of casein per pound of fat in milk. The result will be a cheese richer in casein and hence poorer in quality and market value. On an average casein is worth 2½ cents per pound; milk-fat, 25 cents. The proposition under discussion is practically to make the value of casein equal to that of milk-fat, whereas its presence in the cheese in increased quantity makes a poorer cheese, under the same condition of manufacture. This is simply the old question, in a modified form, of paying for casein more than it is worth.

Now the experimental data, which have largely been instrumental in establishing the fact that cheese made from milk richer in fat is worth more than cheese made from milk poorer in fat, were furnished by the investigation of your own Prof. Robertson, working with Messrs. Bell and Ruddick. Their work was done only two or three years ago, and it is a matter of no small surprise that the bulletin of Prof. Dean, should have so completely ignored Prof. Robertson's results, especially when the latter had at least ten cheeses for every one contained in the bulletin under discussion.

On page 5 of the bulletin, we find that the cheese made from milk poor in fat scored higher than the cheese made from milk richer in fat. These results carried to their logical conclusion, would make skim-milk cheese worth more than whole milk cheese, since they indicate that the less fat and more casein, the higher the cheese scores. This may furnish an explanation of the high quality of the cheese sent by Canada to the World's Fair, since milk on our side averages somewhat higher than yours. In our next competitive test, we shall endeavor to use the poorest milk we can find, and shall confidently expect to take all the the prizes from you.

I may add, however, that the results secured by Prof. Robertson harmonize with the work done at no less than five different experiment stations in the United States.

Let us now consider briefly the second point:

(2) *In whose interests is the proposed change made?* Is it demanded by the majority of intelligent dairymen? Is it called for by the dairymen who have done most to build up Canada's dairy interests? Take the progressive dairyman, is he impatient for the change? Not at all. This proposed change is made solely in the interests of the producers of poor milk. Has not this class of dairymen had the advantage long enough? For a whole generation they have been sharing the profits earned by their better neighbor dairymen. Even if some slight advantage may accrue to the producer of richer milk on the regular fat basis system of payment, a point which we do not for a moment concede, it would take a century to get back the money that has already gone into the pockets of poor milk producers under the old system. It remains yet to be proved that facts will support any such change. Any slight absence of absolute equality under the regular system would not be corrected under the proposed change, because this change is based on claims not established, and assumes that what may sometimes be true is always true. In our work during the past summer with different factory herds of cows, we have found poor milk containing about the same amount of fat differing in proportion of casein to fat as much as the poorest and richest milks. How would such cases be helped by this proposed change? A similar case occurs in Prof. Dean's bulletin. Taking May 7th and

June 6th, the milk contained just the same amount of fat (3.19 per cent.) as shown on page 10, and yet one milk made 9.19 and the other 9.92 lb. of cheese, the difference being due to more casein in one.

Coming now to the last point I shall discuss—

(3) *What is the immediate effect of such a proposition?* The first effect is to cast doubt upon the whole system of paying for fat in milk for cheese-making. The producers of poor milk, who are always and everywhere the "kickers" against the fat basis system, are only too glad to lay hold of any excuse for overthrowing a system that takes from them money which they formerly received but which in justice belonged to others. They dwell simply upon one point, the unfairness to them of the fat basis system, not upon the slight amount of injustice if there is actually any. The proposed change will in this way work more injury than it possibly can good, allowing that it would completely render justice to every individual.

Last year at Ingersoll, I talked with young Mr. Ballantyne, who told me of this plan and also the reasons why he adopted it. His reason was simply this: A pound of fat made more cheese in May that year (1893) than later in the season when the milk was richer, the yield going down somewhat as the season advanced. Hence he reasoned, if we take herds of cows at any one time or for an average of the whole season, the milks of different quality will vary as the milk does from month to month during the summer. Under normal conditions this reasoning would hold good, but I pointed out in my address last year that the drouth prevailing in 1893 affected the milk, making the casein actually decrease for a while when the fat increased. The facts observed under these abnormal conditions formed the original basis of this proposition. Similar conditions prevailed during 1894, and the same facts were noted in our experience.

Summary: Reviewing the points upon which we have touched, we feel warranted in saying that the weight of known facts does not justify us in the belief that any stricter justice would be rendered under the proposed change than under the regular fat basis system, because if different milks vary in quantity of cheese produced per pound of fat, such differences will be compensated for by differences in the quality of the cheese produced.

The proposed change is solely in the interests of the producers of poor milk, and will create dissatisfaction with the fat basis system, because the producers of poor milk will make it an excuse for returning to the old system. Any plan which encourages the production of poor milk, or which fails to encourage constant improvement in milk production, should be unhesitatingly condemned.

PROF. DEAN REPLIES.

The PRESIDENT: I will now call upon Prof. Dean to reply.

Prof. DEAN: It is unfortunate that I am compelled to differ with two of my former teachers, for Prof. Robertson has told you that I was his pupil, and some of you may not know that I spent three months at Geneva studying under Prof. Van Slyke. Prof. Robertson has just told you that it was unfortunate I had not had practical experience—that I was not familiar with that aspect of the case. I thought, before beginning these experiments, that that might be thrown up against us, so we secured the services of one of the best makers in Ontario, Mr. Adam Bell, of Tavistock, who was in charge of our experiments. You will observe that Prof. Robertson's criticism is directed altogether to one point of difference between us. The question between us is as to the relative value of cheese made from richer and that made from poorer milk—all Prof. Robertson's elaborate talk narrows itself down to that. In this matter I did not rely upon my own judgment; all the cheese made during the seven months were scored by two competent men, one being Mr. Adam Bell, and the other Mr. George T. Brill, of Guelph, a prominent cheese and butter buyer. And in five months out of the seven, the cheese made from the poorer milk scored higher than the others, though the difference was not very much. I was not satisfied with that, so in December I had Mr. McLaren come down and score the cheese made in September, October and November. He did not see the cheese made, nor did he know anything about them. They were carried out of the curing room and scored outside. In September the average per cent. of the richer milk used was 3.97, and of the poorer 3 03. The average score of both classes of cheese was the same. In October the richer milk was 4.01 per cent. and the poorer 3.56, and the poorer scored an average of 8-10 of a point higher. In November the averages of butter-fat were 3.88 for the richer and 3.47 for the poorer, and the average score showed ½ point higher for the poorer than for the richer. This is the judgment of a man who knows cheese if any man in Ontario does. I may say at this stage—and I give it merely as my opinion, though I have not the results of any experiments to prove the point—that if we are to make first-class cheddar cheese out of rich milk we must modify the method of manufacture. I think that if you will use more salt and cook a little higher you will improve the quality of cheese made from richer milk. I would like to hear the experience of cheese-makers on that point: With normal milk I believe that up to 3½ per cent. you will get results equal to any, but when you get up to 4 and 4½ you are loading your cheese with unnecessary fat. Another point: Prof. Robertson said that the cheese that had the best flavor and would keep that flavor the longest was the best. In June we had milk of 4.5 per cent. and some of 3 2 per cent. fat. We kept these cheese until Mr. McLaren came down. He scored the cheese made from the richer milk 8 points lower than those made from the poorer milk. I do not say that would be the result in every case, but I think our experiments fairly raise the question whether we have not been paying too much attention to the butter-fat. I do not say we should fail to consider the butter-fat, but we ought not to lose sight of the other main constituent, the casein. Now I come to Prof. Van Slyke's letter. He makes the statement "It is claimed we shall always find in poor milk more casein for each pound of fat than we shall in richer milk." I have never said that; you cannot find such a statement in any bulletin issued from the Department. We did not always get a high per cent. of casein with a high per cent. of fat, nor was it always the other way. I would much prefer to discuss this matter in Dr. Van Slyke's presence. He says they have procured the averages of millions of pounds of milk from many thousands of cows. You know that the American habit is to pile up figures, and try to dazzle us with them. But he can't dazzle us, and he can't scare us with a lot of figures. I would rather have a few experiments carefully conducted than a thousand experiments covering a wide territory, but not carried out with care. Prof. Van Slyke goes on to try to work on the sympathy of the audience by saying that we ignored Prof. Robertson. No doubt he had in mind the fact that Prof. Robertson has done good work, and that he is very popular with Canadian audiences. There are a dozen experiments I might have mentioned in the bulletin. I did not "ignore" Prof. Robertson's work. It was not necessary for me to refer to it. Prof. Van Slyke says that if the cheese made from poorer milk is better than that made from rich milk, the logical conclusion is that cheese made from skim-milk will be the best of all. That style of argument, if we used it generally would lead us to some very queer conclusions. For instance: if a horse can trot a mile in three minutes he can trot a hundred miles in five hours. The professor asks in whose interest this change is proposed to be made. I have had a number of letters from men who are not satisfied with the present system. I could quote you one well-known man who has written to me that in his district the system has been a miserable failure. I will not say a word against the principle of paying for the fat. It is better than the old system of paying by weight alone, far better. But I have been trying to show you a new and a better way. I lay my opinions before you and give you the facts upon which those opinions are based, and you can come to your own conclusions.

The President: This discussion will do good, and whether we agree with Prof. Dean or not, we must all be proud of him as a Canadian boy. For my own part I still retain the belief that the fairest system is to pay for milk according to the butter-fat test. I have been asked why I did not bring before the Convention the question of good roads. My answer was, that holding the position I do in this Association, I did not want to bring any question before it personally. But, at the request of a number of gentlemen on the Board of Directors and others, I have telegraphed to Mr. A. W. Campbell, City Engineer of St. Thomas, a practical man and a farmer's son, who will come before you this evening and will discuss the question of good roads from the standpoint of the farmer.

Mr. BALLANTYNE : After the experience we had, and after the discussions which had taken place in this Association, I had come to the conclusion that paying for milk according to the butter-fat test was the only fair method, and that it had the additional advantage of putting a premium upon the proper care of milk, a most necessary thing. The question raised by this bulletin turns, as it seems to me, upon the relative value of cheese made from poor milk and that made from rich milk. Nothing could have surprised me more than the nature of this bulletin. I asked Mr. Bell who had been the judges, and was informed that Mr. Bell himself and Mr. Brill had acted in that capacity. I do not doubt the ability of those gentlemen, but I expressed the opinion then that in view of the conclusions reached, so different from those hitherto accepted, it would have been well to withhold the bulletin pending further investigation. We know that milk with a high percentage of fat will make a cheese capable of retaining a large proportion of moisture. That should have suggested that it would require more salt. There are here two cheese made in October from exactly the same quantity of milk. The small one is made from 500 pounds of milk containing 3.45 per cent. of fat, and the other from the same quantity of milk containing 4.70 per cent. of fat. The first cheese weighed 46½ lb. and the other 57 cured. Suppose you use half a pound more salt in the richer milk you will have undoubtedly a superior cheese to the other. There is no demand for hard, dry cheese. We want a rich, moist cheese of nice flavor, and we get that flavor in cheese made from rich milk. If it was only fat we wanted we could get it by putting in lard or oleomargarine, making the filled cheese which has been referred to here. That sort of cheese, if kept at proper temperature and used very soon after making, is not so bad, but will deteriorate very quickly. I have never seen a cheese made in any way equal to the Stilton cheese, and what was the foundation of that nice creamy flavor? It was the addition of the night's cream to the morning's milk. It took 10.30 pounds of milk to make a pound of this smaller cheese, and 8.40 pounds for a pound of the other. This larger cheese is as near perfection as any cheese I know. Within the bounds of normal milk, the quality of the cheese is in proportion to the butter-fat in the milk. I regret that Prof. Dean did not conduct further experiments, salting a little higher with the richer curd. I would like to see further experiments carried on at the dairy department of the Agricultural College, and I hope also that every maker will avail himself of the educational facilities afforded there. It gives an opportunity which no maker should miss.

Mr. WOOLEY : How much butter-fat can be incorporated into cheese satisfactorily and without waste?

Mr. BALLANTYNE : Before we got the Babcock tester the prevalent idea was that there was greater waste in the whey from rich milk than from poor. Experiments show that that is not the case?

Mr. WOOLEY : Does it add to the difficulties of carrying on a cheese factory to pay according to the Babcock test?

Mr. BALLANTYNE : The best way is to get the cheese-maker to go down to Guelph and attend the Dairy School. He will there learn how to handle the instrument.

Mr. WOOLEY : We know how to handle the instrument, but there is a lot of clerical work involved in paying by that system for the milk of 80 or 90 patrons. How do you manage all that?

Mr. BALLANTYNE : If you will come over to my office you can see there a set of books used in my factory, and I think they will give the information asked for.

The convention adjourned until the evening.

SECOND DAY—EVENING SESSION.

The **President**: We are to have an innovation this evening in the form of a talk on good roads in relation to the dairy. I am glad to be able to introduce to you a gentleman who thoroughly understands this question. But before introducing Mr. Campbell let me say a word on behalf of the Good Roads' Association. We in that Association believe in organization. I have already pointed out to you what you have done in the dairy industry through organization, I have shown you that the success of cheesemaking in this country is due mainly to the organized efforts of the different dairy associations. We believed, therefore, that if good roads were to be had they must be the result of organization and so we have banded ourselves together in the Good Roads' Association. People often ask me if we want to abolish the statute labor system. That is an important question, and I may answer it in this way: We do not want to abolish this system just now, but we want the system, while it exists, to give us good roads—and, if it will not do that, then we want you to assist us in devising a plan that will. We would like to see delegates from this Association at our Good Roads' Convention in Toronto on 7th February next, our object being to promote the farming and dairying industry of this province by making better roads than those we now have. I have much pleasure in introducing to you Mr. A. W. Campbell, C.E., of St. Thomas.

OUR ROADS.

Mr. **Campbell**: It affords me very great pleasure to come and discuss before this meeting the subject of good roads. You grant the advocates of good roads a great privilege in allowing me to take up any part of your valuable time in discussing this subject. The President has introduced me in very flattering terms, telling you that I know all about this subject. You must allow something for his enthusiasm in this matter, for he is the originator and prime mover in the organization for the advocacy of good roads. His flattering introduction places me in a peculiar position. But let me explain that I am not here as an engineer but as a municipal officer, and I belong to the Good Roads' Association not as an engineer, but as one who has had some experience in road-building. In my capacity as engineer for the municipality in which I live, I have experimented a good deal, within the last four or five years, in the making of roads, and all that I know upon the subject is what I have gleaned from that experience. As an engineer I am not posted on the question, and, as a road-maker, I simply have the information which I have gained from experience. I make this explanation because I have noticed, in addressing meetings of farmers' institutes, a feeling that these meetings were for the discussion of questions relating to farmers, and that our coming in was by some regarded as rather an intrusion. I am not a farmer or a dairyman, but I am not without some knowledge of farming and dairying matters. I was born on a farm and lived there for some years. There were four boys of us. The father picked out three who, he thought, were good enough to be made farmers. I was the cull, and, as I would not do for a farmer, he decided to give me a profession. If the roads are to be improved, the question naturally arises, Who shall do the work? You have no men at present trained to this particular work. So, as soon as possible, you must find some men who can be educated to make roads. The farmers' boys are the people who should be instructed in this line. Train some in road-making just as you would train them in farming, and you will soon have a body of scientific road-makers in this country. I do not know where you are to find such people at the present time. It has been very broadly hinted to me sometimes, that we engineers advocate scientific road-making simply to furnish work for ourselves. But unless an engineer has gained some personal experience he has no means of knowing much more about road building than one of yourselves. No doubt there are in this meeting a number of pathmasters and many municipal councillors. If, in the course of my address, I say some things that do not seem pleasant to them, I hope they will excuse. I do not wish to give offence, but I have a delicate subject to handle. The question of how to improve our roads is not a question of recent growth; it has come down to us from former years. Ever since our forefathers marked out the way through the forest by "blazing" the trees, this agitation for improved roads has been going on to a greater or less extent. We owe much to the pathmasters and municipal councillors who have made our roads what they are. But we believe that our roads have not been brought to the state of efficiency they ought to have attained through so many years of work upon them. We thank you, gentlemen, for what you have done, but this is an age of rapid transit, and we must pass you by. We only ask that you give way to your sons and that, meantime, you educate those sons so that they may be the road-makers of this country. The statute labor system, as now operated, we regard as unjust and unprofitable—a waste of public money. We do not say that the statute labor system in itself is wrong, but we do say that as operated it is wrong. A few days ago, at a meeting in the village of Embro, I asked if there was not a pathmaster present honest enough to stand up and state whether he did not know of cases in which the public funds expended by him in his public capacity were wasted. If there is any class of people who know the defects of the law as at present carried out, that class includes the pathmasters and the municipal councillors. One man had the honesty to stand up. He said he had been elected as municipal councillor, and felt he must do what he could for the benefit of his constituents. Complaint had come in that the road in one section was almost impassable, and that money should be expended upon it. He went down and consulted with some of his main supporters. They took him to the place. He asked what was necessary to be done and was told that a ditch should be made for three hundred rods alongside the road, the material taken out to be thrown up and graded so as to raise the level of the road. He agreed, and gave the contract to one of the parties who had taken him down at $1 per rod. The drain was constructed in a dry time in the fall of the year. Next spring the councillor asked how the road was. "It's all right," was the answer. "How about the drain?" "It's full of water." "Which way does it run?" "Sometimes it runs one way and sometimes the other." So they had actually made that ditch without any means of knowing whether they were taking water off the road or running it on. We often see instances of gravel being thrown upon roads that are not properly drained, so that as soon as traffic goes on it the road becomes a quagmire. In other instances $300 or $400—I have even seen $500—are spent in reducing the grade of a hill when the road might, by deviating slightly from a straight line, be made to skirt it, thus getting a much better grade at much less cost. Pathmasters who have had no experience often put gravel upon the road in too small quantities. The traffic cuts through in a short time and the road is left worse than if nothing had been done. The first principle of road-making is drainage. Commence at a certain point, and make drains on either side. Make these drains $2\frac{1}{2}$ feet deep at least, and see that they are carried to an outlet. After the drains have been constructed along the road and, if necessary, through the adjoining property, round up the road so that it will shed the water. Where necessary, in retentive soil, put drains through the graded part of the road so as to discharge the moisture into the side ditches. If this is done, and the road is properly graded with a crown of 12 inches, the result is sure to be good. Whatever material you may put upon it will make a smooth good road, one that can be kept in order with comparatively little looking after. Another absurd mistake made in some cases is to haul gravel at great expense and dump it on the road, leaving the traffic to level it. The wheels make ruts which are filled in by the rain, making the road worse instead of better because of the gravel put upon it. There are a few simple rules in road-making, and if these are followed the roads are sure to be fairly good. The Good Roads' Association seeks to stir up public interest in this question, and to bring together pathmasters, municipal councillors and others to find if it is not possible to unite upon some practical plan of improvement with a view to having our roads good and uniform. We carry on a crusade not against pathmasters and municipal councillors but against the present method of making and maintaining our public roads. Some tell us that this movement originated in bicycle factories, and is being fathered by bicyclists. I can only answer by asking who are the men who form this Good Roads' Association, and who are the men discussing this question before the farmers institutes? They are simply the reeves, deputy reeves and pathmasters, who are in the best position to judge of the wastefulness of present methods. And who are the bicyclists? At one time, it is true, they were mainly the dudes of the cities who took up bicycling because of its novelty. But to-day live business and professional men of all classes have taken up the use of the bicycle, not as a matter of recreation merely, but as a mode of travel. These men are taxpayers, and we are glad of whatever support they can give us in this movement. It is said that the movement is one to make the farmers improve the roads wholly at their own cost. We do not say that. We believe that the people of the cities and towns will be benefited by this improvement just as well as the farmers, and they should be assessed for a fair share of the cost. We do not know upon what plan that assessment should be made; we leave that to be brought out by the public discussion of the question. We find, again, that a great deal of money is lost in the present method of constructing bridges and culverts. How often it happens that the commissioner or councillor or pathmaster will let the job of building a culvert for $25 or $50. It is constructed of timber, but the varying condition of the road in which it is, from wet to dry, rots it, and before you would think it possible some day it breaks under a heavy load. An action for damages is brought, and rather than have a lawsuit the council pays a couple of hundred dollars. Or, if they think the demand unfair, they stand a lawsuit, a verdict of a dollar is rendered, and they have to pay five or six hundred dollars of law costs. Would it not be better to construct these culverts of vitrified tile or stone or some similar material with a view to permanency. I have been told several times that the construction of vitrified tile culverts is not a success. I have seen a number constructed that would be pretty sure to fail. An opening is made in the road, the tile laid in and the opening filled up, no outlet for the water being left. A freshet comes and the tile is filled with water. Then there is a frost which bursts the culvert. It would burst iron. If these things were done in a uniform and systematic manner with some knowledge of the art of road-making, much of the money now wasted would be saved. I have looked over some of the reports we have received from municipal clerks with reference to the working of the statute labor system, and the amount of money now expended out of the general fund. A great many people think that the roads are constructed and maintained by statute labor. Little do they think that the majority of the townships expend from $6,000 to $8,000 per year out of the general funds. For the township of Malahide I made an estimate for the construction of 150 miles of roads. In that township gravel may conveniently be had in every part. The roads were to be constructed at one time. We do not advocate that. If so many miles were constructed each year and the whole finished in ten, fifteen or twenty years the result would be the same. The total cost according to my estimate was $150,000. The statute labor in that township last year amounted to $4,661, and the amount expended on the roads besides was $4,853 a total of $9,714. Now if you pay off $150,000 in forty equal annual instalments, with interest you will have to pay $8,233.10. So you see you could have permanently constructed, good roads in that township for about $1,000 a year less than they now pay. I have compared these figures with those for other townships, and I find that the general results are the same in every case. And remember, the money would not be sent away, but would all be left in the township and earned by the people in the township. In addition to this, the price of your land would be increased. We do not consider it an exaggeration to say that the value of the land would be increased by ten per cent. In the township of Malahide this would represent an increase of $300,000. So that, besides the money spent in improving the roads, the people would be the gainers to the extent of $150,000. If you think this is an exaggeration, compare it with what we know of the increase in the value of land through other public improvements, and you may change your mind. I remember when the agitation for a uniform system of drainage works was going on. Farmers then used to say that they could drain their lands when they got ready. It was shown that by uniting their efforts, all concerned would have the benefit of extending payment for the works over a term of years. I have now in mind the case of a man whose land, at the time of the agitation, was worth fifty cents an acre. He was taxed at the rate of $6 an acre for the drainage works, and now his land is selling at $48 an acre. In the township of Elma, which is in this neighborhood, I find the cost of constructing permanent roads would be $180,000, or $9,879.72 a year for forty years to pay principal and interest. At the present time that township pays for roads about $11,000, counting the statute labor at $1 per day. Is the present system a fair one? That is, does it operate fairly to all? You are a progressive citizen, anxious to improve the roads as much as possible. You go out to work on the roads with a first-class team, only to find that your neighbor, who is supposed to do as much work as you, is plowing his own fields with his hired man plowing alongside him, and has sent out his grandfather with an old-time team of horses that for the first time during the season have been taken in from the straw stack. I have a father and three brothers who do statute labor, and I know that they regard the system as now carried out, as a wilful waste of public money and of individuals' time.

It is impossible to refer definitely to the losses occasioned to any community through bad roads. The public treasury suffers owing to the present extravagant system of road maintenance, to which must be added the large amounts paid both in the way of law costs and damages to persons who have suffered loss through accidents caused by non-repair and bad condition of the roads. That bad roads make large demands on private funds is admitted. In comparison, the economic benefits of good roads can readily be shown by their cheaper maintenance, greater and easier facilities for travelling, less cost for repairs to vehicles, a proportionate relaxation of strain upon our horses, a consequent saving of time, to say nothing of the comfort to be derived therefrom by those using the roads. The increase in land values will more than pay for the permanent improvement of roads and this increase will be greater if the county system of road improvement is adopted.

Apart from the acknowledged interest in good roads of the builders of wagons, carriages, bicycles, traction engines, and implements, and carriage owners, horse breeders, etc., and that of all merchants and manufacturers, in respect to the cheap and speedy distribution of goods and better collection of raw materials and money returns, there are many great semi-public institutions whose interests are deeply involved.

Railroads, in the equal distribution of their traffic through the seasons, securing constant employment of their force and equipment; telegraph and telephone companies, in the extension of country service; newspapers in the expansion of their circulation through free delivery that will follow good roads; banks and bankers in the quicker movement of capital in country business; and all philanthropic associations and individuals in the provision of employment sufficient to "abolish poverty," or at least want and starvation, for a generation.

The fertility of tillable land is constant and it is the accessibility to market that fixes its value. Ontario's wealth in agriculture is owing to the facilities for transportation afforded by her network of railways. The resources of our country would be almost useless without such means. The same law by which the railway gives value to real estate also applies when a good road completes the system from the farm to the station. With good roads the owner can come and go when he gets ready; he can sell his produce when the prices are best; he is not compelled to wait the pleasure of sunshine or shower, and go "when the roads are good," nor is he compelled to force his produce upon an unwilling market at whatever price a crowded warehouse, elevator or railroad may dictate. He can profitably employ his teams at all times of the year; time will be saved, business will be regular, teaming can be done when the farm does not require attention, larger loads can be drawn in less time, the price of all products would be that allowed by the law of finance—supply and demand. We would no longer be at the mercy of greedy speculators and glutted markets, and the farmer would take his rightful place in the business world and increase profits by decreasing the cost of production.

The construction at once of a complete and thorough system of county roads for a municipality, or several contiguous municipalities, has many advantages. It brings into the locality, to be paid out for labor, and afterwards used in improving and increasing the value of the taxable property of the county, the amount required for the improvement. As soon as the system is completed there is a large increase in the marketable and taxable value of all the farms, and the people at once come into the enjoyment of the comforts and advantages which are derived from good roads. The work, the large amount of which makes it practicable to adopt a thorough system, can, therefore, be much more economically conducted than when it is carried on in a fitful and irregular manner, insuring at the same time the almost certainty of better roads. The annual tax now levied for the improvement of roads would be then levied to pay interest on the bonds, and to keep the roads in repair. In some portions of the country it is, of course, more difficult and expensive to construct and maintain good roads than in others. Any enterprise which reduces the cost of transportation, and increases the value of land, should commend itself to all. It would be difficult to devise a scheme that would contribute so largely to the general prosperity as money judiciously expended in the construction of first-class roads.

While yet the first settlement of this country was proceeding, those keen monopolies, the railway companies, came in and asked for assistance in constructing their works. The people responded in a liberal way, and, no doubt, many of you are still paying large sums towards the construction of these roads. For that reason, the improvement of our country roads has been largely neglected. Now, this country's agricultural wealth is owing almost exclusively to the splendid system of railways which we have, but it can be still further increased by improving the means of transportation from the railway station to the farm. The carrying of milk from the farm to the factory is a very great item. The chairman has already dwelt upon that, so that it is not necessary for me to do more than refer to it. But we claim that in this and in many other respects the improvement of our common roads would result in great good to the people. I thank you for the kind hearing you have given me. I would ask you to consider the question carefully and in a fair and impartial manner. If you think there is anything in the reform, do what you can to help it on. Send delegates to the Good Roads' Convention, and let us see if the united wisdom of this country cannot devise a better plan than the one now in use.

The President : Before entering upon the consideration of other subjects on the programme I will call upon several gentlemen for five minute speeches, the first being Mr. Derbyshire.

Mr. Derbyshire : This meeting has been one which all must have enjoyed, and by which all will benefit. Though you, Mr. President, maintain your regard for the good county of Oxford, yet this county of Perth and the city of Stratford have given us, in this Convention, the best dairy meeting ever held in the Province of Ontario. No such audience has ever been assembled for the consideration of dairy questions as that I see now before me. We are all proud of what the dairying business has done for this country. Besides the wealth it has brought to our country it has been a means of education second to no other. I would like to see this matter of road-making taken up in the same practical and enthusiastic way. If we do I am satisfied that equally good results will be achieved. I remember how we used to do our road labor in the old days. I remember how we looked forward to the good times we would have swapping our stories while nominally engaged in the making of our public highways. I believe we should send our delegates to the Good Roads' Convention so that a better system may be devised.

Mr. Gould was then called upon. He said : I believe that over in Ohio we are right to the front with you in the badness of our roads. Mr. Campbell spoke of the pioneers blazing their way through the forest. We did that in Ohio, and we have been blazing away ever since, and we have hardly got a good road yet. I remember that as a boy I was too small to work on the roads, but I carried water for those who did. And the sorriest day we ever saw was when the rail fence was abolished and the barb-wire fence came in, for you can't sit on a barb-wire fence and tell stories. I am surprised to find this question of roads among you good Scotch people in Canada, for I thought you had all pike roads here. But I find you are about in the same condition that we are. One of the things we should start out with, I think, is to abolish all working out of our taxes by hand, but have the taxes paid in money, and that money spent on the roads. In my town (or as you call it over here, township) which is five miles square, the labor done on the roads is worth $2,400, and we spent besides last year $700. And I will guarantee that all the road work done in that municipality last year could be done by contract for $300. Now, Ohio has not a very good road law. But five or six years ago the counties of

Hamilton, Darke, Montgomery, Prible and Sciota went to the Legislature and got authority to issue twenty-year bonds for a million dollars for each county, and they spent a million dollars each on good roads. We talk about the depression in agriculture and the depression in the value of agricultural lands, but you can't buy a farm in any of those counties cheaper than you could ten years ago. In my town we have made a litttle start toward good roads. We have a law in Ohio providing that when a majority of the ratepayers, on any road, petition the county commissioners for a good road, that road is to be constructed and the property for a mile on either side assessed to pay for it. Unfortunately I live in a very poor township—of course I need not tell you that. We have always felt that something ought to be done to improve our roads, and we have discussed it ever since I was a boy. It is a clay section—there is not a gravel bank within miles,—so when we had decided upon having a road the question arose what material we were to use. The railroads came to our help. We figured out that the railroad brought in and took away from our station about 1,200 carloads of freight in a year, and we were able to show the railroad company that they were interested in facilitating the means of getting that freight to and from the station. Finally they agreed that if we would build two miles of pike road from the station to the village and from the village two miles each way, they would lay down for us 100 carloads of cinders and slag for $150. We went to the town treasurer and found that we had $100 of road fund unexpended. It must have been an oversight. The trustees had to provide $100, making $200, or $50 more than the cost of the cinders. The cinders must be drawn and the road put into repair. We decided to put our own shoulders to the wheel. We were to put one year's road taxes into this road, and in our road work we were to put in ten hours' good work a day. The Yankee doesn't like to shovel, so we hired a colony of Finns from Cleveland, getting 100 days of time-work on the road. We put the road into the best condition with the road scraper. We did not ditch it—simply levelled it, then put on a bed of cinders and pounded it down. Then the Finns took their shovels and ditched the road and we put on a mess of slag and cinders to hold the work in place. Now we have a road we can trot a horse on any day in the year, and the longer we use it the better it becomes. Had it not been for the railroad strikes, which prevented us from getting more cinders and slag, we would have built four miles of road instead of two. Now, I want to tell you something that will make Mr. Pattullo's heart glad. There is a creamery at one end of our road. In the district from which the milk is brought over this pike road the receipts have doubled, while in the other they have fallen off. There are men who would not have milked a cow this winter but for the fact that the road afforded such an easy means of getting the milk to the creamery. The other day the creamery man said to us: "If you will build two miles of pike from the creamery the other way I will give you $100 cash." We have done honest work on the road, and we have a good clean pike that is a joy forever in that township.

DAIRYING IN CANADA.

Prof. ROBERTSON was then called upon and delivered an address on "Dairying in Canada." This address was similar to the one delivered before the Creameries' Association, and will be found in the report of that body given in this volume.

At the conclusion of Prof. Robertson's address the convention adjourned until the following morning.

THIRD DAY—MORNING SESSION.

When the convention resumed business on Thursday morning, the President called upon Mr. Everett to address the meeting.

PRACTICAL HINTS TO FARMERS AND DAIRYMEN.

Mr. Everett: When I spoke on the subject of swine yesterday I was much gratified with the discussion that followed. That discussion was an indication to me that I had done some good, and I am rather in fear that by making another attempt to address you I may make a mistake. But there are several subjects that concern you on which, as you have called upon me, I desire to say a word or two. I speak from the standpoint of the farmer, for I milk cows and feed hogs every day for my bread and butter. What I have to tell you shall be of a practical character. I do not say that you are to follow me in what I have done, for differences of climate or other conditions may make that impossible or inadvisable. But so far as my experience can be of advantage to you I place it at your service. First, I want to talk about the cow and to clear up a few points which perhaps were not left very clear yesterday. Let us begin with the calf. What Mr. Gould told you yesterday about the first few hours' life of the calf was very important. His practice is the same as mine—to place the calf at the cow's head and milk the cow yourself. But Mr. Gould said nothing about rearing this heifer calf that is to become the dairy cow. By our treatment of this calf, and by our feeding of her, we can cause her to use most of the feed we give her in making beef, and spoil her for dairy purposes. But we do not intend to do that. Let us feed this little calf with its mother's milk for the first week or ten days, feeding three times a day and in small quantities. Remember that more damage is done by overfeeding at that age than otherwise, because the calf's stomach is very tender, and very little will upset the digestive organs. At the end of a week or ten days we begin to add a little skim-milk, and when the calf is three weeks old we give only skim-milk, for the butter-fat in the whole milk is too valuable to feed to calves, and we give the calf something else that is just as good and cheaper. Take a tablespoonful of oil meal and mix it with hot water. That and the skim-milk will do very well. At four weeks old we want the calf to eat oats. I'll tell you how we teach the calf to eat oats. When her nose is wet we rub it over with oats. The calf licks the oats off and so learns to eat oats without knowing it. In addition we feed a little clover hay and a little bran. We feed ensilage also, but first we pick out the corn. Don't feed what will make fat, but choose rather what will make rapid growth and give the calf plenty of exercise. Mr. Gould spoke well yesterday about the training of the heifer. We have our heifers freshly milked at twenty-eight months old, coming in in the spring for the reason that Mr. Gould gave yesterday—it gives us a chance to handle the heifer through the winter in the stable. That is important, as it enables us to avoid trouble with her when she is fresh in milk. Then we may milk her for sixteen or eighteen months before we want her again in the dairy. The long period of milking is thus established, and the heifer becomes accustomed to it. She becomes virtually a perpetual milker. It is not a heavy milker we want, but one that will milk the year round. When heifers are thus reared, you will find it difficult to dry them off at all. Now a few words as to feed, and first as to clover and clover hay. I am called a crank on clover over in Wisconsin, mainly, I suppose, because I adopted a method of curing clover hay which has proven perfectly successful. We cut our clover when it is in full bloom, commencing on the early side so that we may get through before any of the clover is over-ripe, because it has then passed its best stage for feeding purposes and has become indigestible. We use hay caps and we find them very useful. These hay caps are made of cotton, and we find them just as good for our purpose as though made of the best canvas. The web is 1¼ yards wide and we tear it up in squares. Seven years ago when we first used these caps we used wooden pins to fasten them down, but we found the pegs a nuisance, and now we use stones, ordinary cobble stones of about four ounces, one in each corner of the cloth. We tie the pebble into a piece of the cloth not as large as an ordinary handkerchief, using hemp twine to tie it in, leaving an end of about six inches. Then we tie the cloth containing the pebble to the corner of the hay cap. This lets the pebble hang down about three or four inches from the cap as it rests on the hay. I may say that we use hemp twine because it stands the wear best and sets close. With a weight at each corner the cap weighs something over a pound. We commence cutting in the morning as soon as the dew is off, and cut enough to make two hundred cocks of hay. After dinner we rake the hay and cock it up. We want it to wilt a little. We put it up in medium sized piles—don't get them too large—and immediately cover the cocks with the hay caps. Next day we cut 200 cocks more, treating the same way, and the next day 200 more. Now we have 600 haycocks under caps. On the morning of the fourth day we start the mower again to cut the same quantity as on each previous day. An extra man is sent to take the caps off the hay cut the first day, to be used on that we are now cutting. You will find the hay, on which the caps have been, heavy, soggy and damp. It is not cured, and you would say that it would be impossible to cure it. But if you loosen it up you will find that in a couple of hours the air has dried it, and that you have the best clover hay you ever had. You will find that you have saved the foliage, the head and the leaf, which is the valuable part. Not only that, but you have saved the flavor, the aroma which makes clover hay especially desirable. The fifth day you cut the same quantity as before, covering it with caps taken from that cut the second day, and so on until your clover hay is all cut and cured. Hay put up in that manner holds its color because you avoid heating. Clover hay cannot heat in the mow or stack without loss of feeding value, and when there is a loss of feeding value there is a loss of manurial value. Of the clover hay gathered in our state two-thirds is not good. But the people are making better clover hay than they used to. I was the first man to describe and advocate this method of saving clover hay, and to-day there are thousands of hay caps in use in Wisconsin. The cap is used not only for clover but for barley and many other things. Hay caps made in this way will last as long as you live. The Secretary of our Agricultural Society has used them for twenty-five years, and those he made at first are as good to-day as when they were new. They are used only for a short time in the summer, and if taken care of and kept away from rats and mice, need not be injured at all. The clover will not reheat in your barn if you are careful to air it before putting it in. It will retain its green color, the heads being pink. Of course this would not be possible if it had heated. Now clover is a valuable plant, the most valuable plant that we farmers can raise. It has the highest feeding value—and it is the only plant that leaves our land in better shape after it is taken off than the land was in before a crop was put in. We ought to take care to save it in good condition, because it comes nearer to being a balanced ration than anything else on the farm. We feed clover to everything. It is all our horses get in the shape of grass feed, except oat straw, when they are not working hard. We want our cows to eat all possible of it. Now, a few words about corn. Of course we raise a great deal of corn, as we are in the corn country. But our practice as to cultivation, and so on, can be followed to advantage by the farmers here, I believe. We plant corn where clover has been growing. We manure the ground in the winter, and in the spring we plow the soil rather shallow, working it down as fast as we plow it, so that every night we have planted what we have plowed during the day. This is done to save the moisture. The more completely the top soil is pulverized the more completely the moisture is held down. We start the harrows on our corn as soon as we are done planting, and we continue to harrow sometimes until the corn is six inches high. After the corn is up we harrow only in the afternoon, when the plant is tough ; in the morning it is brittle and will break off easily. We sometimes follow the planter with a riding cultivator, and pile the dirt right on, and we often harrow crosswise of the ridges. If we are planting the dent corn we put in one kernel to every ten inches, but if it is the large southern corn we plant a little thicker; if the flint corn, we plant still thicker—one kernel to every six inches. When the corn is up we start to cultivate it. We use a cultivator which has no shovels, but knives, two on each side of the row. These knives run diagonally across the corn ; they are made adjustable, so that they can be laid flatter if you wish. They cut all the soil except within four inches of where the corn is growing. Immediately following the knives is a leveller, a piece of steel 6x14 inches. This catches the earth that rolls back over the knives and pulverizes it thoroughly. At the same time if weeds have started they are rolled out, and the dirt is pulled off their roots so that they cannot revive. Any weeds you find there after that will have come from the seed. It is impossible to keep corn clean by means of any machine which has to have guards to keep the dirt off the corn. Hand hoeing is out of the question; labor is too expensive for that. But this machine does it as well as it can be done without hand hoeing. When the corn is only two inches high we turn the knives down so that the dirt will fall back over them. The next time it will be necessary, perhaps, to allow a little more dirt around the corn, and the third time the corn may be hilled a little. The next point is early cultivation. I have made many experiments with my own corn. I carry with me always a pocket microscope, which affords me not only a great deal of pleasure but a great deal of instruction about matters which, without it, I could not at all understand. I find by examination that when my corn is four inches high it has already thrown out roots almost a foot long, but they are only in the surface soil. Corn roots do not go into the soil, as many suppose. It is true the plant has some roots that go deep, but they are few in number. Scientists will tell you that these go in search of moisture, but the roots that remain near the surface are covered with hair-like fibres, which are necessary to the life of the plant. When we cultivate corn deeply we mangle these roots and retard the growth of the corn. I have tried the experiment of mangling one of these roots. Going back a few days after, I found that the wound had healed and the root had started to grow again. But the check to the growth of the root had, of course, retarded the growth of the whole plant. That is the reason why we are sometimes caught by the frost, and the reason why I am able to avoid the frost very largely is that my corn ripens two or three weeks earlier than it would if I cultivated deep. Some men will tell you that we should prune corn just as we do the roots of our apple trees when we set them out. But you must remember that the apple tree has twenty-five years to mature, while the corn plant has only ninety days. Another reason for cultivating in this way is that it keeps the moisture in the soil during the hot weather, when otherwise it would escape to the injury of the corn. The moisture is always climbing up through the fine pores of the soil But if the surface is pulverized these pores are dammed up and the moisture is retained. I have been glad to listen to the able speeches made here on the subjects of butter and cheese. We have gone into butter because the skim-milk has high feeding and manurial value. I do not, therefore, advise you to go out of cheese. I want to say to you Ontario farmers: Stick to cheese; you are all right in that business. The reason why I am not in that business, as I tell you, is because the skim-milk is worth to me 25 cents a hundredweight to feed, and there is the manurial value besides. The butter-fat which is taken out in the cream has no fertility in it, but the nitrogenous portion has, and that portion is sent away if the milk is taken to the cheese factory. In selling 100 pounds of butter we do not sell two cents' worth of fertility. Now whey, as it comes back to the farmer in our country, is worth no more than rain water, because it comes back sour. I would rather feed pure well water than feed sour whey, because the milk sugar, by the souring of the whey, is turned to lactic acid, which has no feeding value. A chemist will tell you that whey has a feeding value of about ten cents a hundred, if fed sweet. But it is difficult to get it in that condition, because our factorymen are too careless in regard to their whey tanks and vats and neglect to keep them clean. Perhaps you are better off in that respect. We keep hammering at our factorymen, but still the whey vats are only stinking holes.

Mr. DERBYSHIRE: Keep the hogs near the factory and then the whey can be fed sweet.

Mr. EVERETT: You mean that the patrons are to own the hogs and feed them the whey?

Mr. DERBYSHIRE: Or the proprietor has the hogs, and buys the whey and runs that part of the business.

Mr. EVERETT: And keeps the hogs some distance from the factory?

Mr. GOULD: About three miles, would you think?

Mr. EVERETT: Some said one thing and some another about the value of skim-milk fed to hogs, so I decided to experiment for myself. I set apart some shoats and fed them on skim-milk only. I made 4½ pounds of pork from 100 pounds of skim-milk. In the next experiment I made 5¼ pounds of pork from 100 pounds. The shoats in the first case were not pure bred. In the second experiment I had pure bred Poland Chinas, and the extra gain I claim to be due to the better breeding of the shoat. This would show that it was worth 25 cents a hundred to feed alone, but, feeding it along with other things it would be worth 30 cents to 35 cents. The greatest gain that can be made, I believe, is with skim-milk and corn meal, made into a mush. This subject of fertility and manures is so important that I would like to talk about it, but I must not occupy more time. Let me just ask you to remember that the fertility of his farm is the farmer's bank. Before I sit down allow me to say that I have been delighted with this convention. I have met here an audience that any man might be proud to face—a crowded hall and every man attentive and following every word with intelligent interest. It is evident that you are bright, skilful, progressive men, that you seek information and can use it when you get it. We have in our state some splendid meetings of this kind, and I assure you we shall be glad to entertain you at any time when you come. We have had many representatives of Canada at different times to talk to us, and we have learned many valuable lessons from you. One of the best lessons we ever learned was when you licked us in cheese at the World's Fair. We bear you no enmity for that; our feeling for you on that score is one of respect. But not the less we will try to lick you in similar competitions when we can. We are going to have better cheese in Wisconsin, as I told you the other day, and we hope to establish our reputation so as to stand some show with Canada in the markets of the world. I desire to thank you all for the attention with which you have listened to me, and for the kindness and hospitality you have shown. And, further, I hope there may be no differences between us as nations, but that you may always have for us the friendly feeling we have for you, and I assure you we shall always be ready to extend to you the right hand of fellowship and to greet you with brotherly love.

The PRESIDENT: I am sure you appreciate the practical information Mr. Everett has given you, and not less the kindly feeling to which he has given expression. While we tell our American friends that we do not intend to allow them to do better work than we do, we wish them God-speed in all their efforts as a nation, commercial or otherwise. I am sure you are all more than pleased with our friend, Mr. Everett. We shall always remember him kindly, and we hope that this is not the last time we are to have the pleasure of hearing him address a convention of this Association.

REPORT OF NOMINATING COMMITTEE.

The report of the Nominating Committee was then presented and adopted. For list of officers, etc., see page 62.

The PRESIDENT: Will you permit me to say with reference to this report—which I had not seen until this moment—that I appreciate very highly the compliment you have paid me in re electing me as your President for the current year. The Committee knew that if there was any other man who wanted this position I would not accept it. I think it is only due to myself and to the gentlemen, one of whom ought to be President, that I should say this. Further than this I can only say, that having accepted the office for another year rather against my own interest, I assure you I will endeavor to discharge its duties most faithfully in your interest.

COMMITTEE ON DAIRY UTENSILS.

The Committee on Dairy Utensils presented its report as follows:

We, your Committee on Dairy Utensils, find that there is on exhibition a gang press with spring head, exhibited by Richardson & Webster of St. Marys, Ont. We take much pleasure in highly recommending this press to our factorymen. We also find a milk agitator exhibited by D. Ewing, of Cobourg, Ont., which we also recommend to the attention of dairymen. We also find two Babcock milk-testers exhibited by John S. Pearce & Co., London, Ont.—one 30-bottle size for factory use, and one 4-bottle for farmers' use or private dairy. We take great pleasure in highly recommending these machines as being strongly constructed and capable of doing the work for which they are intended. We also find Dillon's Milk Book and Ledger Combined, which we also highly recommend as being conveniently arranged for keeping cheese factory accounts. There is also a small churn, on the rocking system, which may be useful in private dairy. We also recommend a greater exhibit of dairy utensils at our annual conventions.

All of which is respectfully submitted.

The PRESIDENT: I should like to ask you to listen to my excellent friend, Mr. Geary. I am sure he will not object to my saying that one of the men who have made this Association—one to whom you owe a special debt of gratitude—is John Geary, the former President of this Association. As a young member of the Board I owe him a good deal more than I can tell you here. He has worked hard to promote the dairy industry of this country, and his work has resulted in great good to you.

Mr. JOHN GEARY: I did not expect to be called upon, as there are others to address you who can give you much more information than I can. But, as I have been called upon, let me say that in leaving the Board of your Association I do it with many regrets. I have spent four years of my short life in serving you as a director. The kind words your President has spoken of me would be applicable to the whole Board, for all its members have been most anxious to promote the interest of the Association and of the dairying industry. Without being egotistical, I think I may fairly say that you owe much to your Association. The victories we won at the World's Fair are largely due to the exertions put forth by your Board of Directors. I hope that the progress that has been made may continue. For the four years during which I have been a member of the board our conventions have been growing steadily better, and I have to congratulate you upon this being one of the best conventions I ever attended. Last year at Ingersoll we thought we had capped our achievements in the matter of conventions, but this is even better. I congratulate the city of Stratford upon holding what must be regarded as the banner convention of the last ten or fifteen years. I leave your service as a member of the Board with many regrets. Let me say that I never acted under a more capable chairman, or one more desirous of promoting the interest of dairying than your present President.

DAIRYING IN QUEBEC.

The PRESIDENT called upon Mr. J. C. Chapais, Assistant Dairy Commissioner.

Mr. CHAPAIS: I have been asked to tell you something about Quebec dairying. I suppose you want to compare what we are doing with what you have done, and see whether we are doing our duty in the dairy industry. I see by your reports that you were engaged in co-operative dairying long before we were. In 1864 you opened your first factory. Our first factory was opened in 1872. In 1867 you organized your first dairymen's association, which, I understand, was the mother association to this. We in Quebec organized our first dairymen's association in 1882. I see by the report that in 1893 you had 971 factories, of which 70 were butter factories. Let me tell you what we have done, so that you may see that we are trying to follow your example of rapid development. In 1872 we had one factory, in 1883 we had 143 factories, in 1888, 485, in 1891, 732, and in 1893 1,273 factories, of which 210 were butter factories. As you see, we are getting on pretty well. We have only one dairymen's association in our province. In 1893 you had in your three associations 806 members, of whom 151 were members of the Eastern Association, 55 of the Creameries' Association and 600 of this the Western Association. The membership of our Dairymen's Association in Quebec is 1,081. The grants from the Ontario Government to the three associations in this province amounted to $6,249. The provincial grant to our Association was only $2,000. When we began this work as an association we thought the thing to be done first was to try to reach the farmers everywhere. We knew that at first we could not bring the farmers to the Association, and we had to go to the farmers at their homes. So we began the formation of farmers' clubs. After the first ten years' work we could not see that much progress had been made. But though the growth was slow, it was enough to show that some good was being done. Of late years we have been gathering the fruits of our former efforts. In 1881-2 there were 60 of these farmers' clubs, in 1892-3 there were 399, and in 1893-4 there were 515; and as these clubs have an average membership of about 75, you will see what a large body of farmers we can reach through this agency. We have lecturers paid by the local government who are at work all the year round, and who speak specially upon dairy matters. The second work we undertook was the improvement of the cattle kept in our province. The cattle were of good stock but they had not been well kept. We found that the best breed of cow we had in our province for dairy purposes was the French Canadian cow—what some of you improperly call the Quebec Jersey. We opened a herd book in which we have now registered 1,700 cows and 300 bulls. Then we had to teach the farmers how to feed their cows, and that brought up the question of ensilage. We have done a great deal to popularize the ensilage system. There are many silos in our province to-day, and those who use them find them profitable and are, therefore, well pleased with them. Then we needed good factories everywhere, and we found that the only way to have good factories was to establish a thorough system of inspection. When our Association was organized in 1892, we appointed two inspectors, and, as the factories were not numerous at that time, the work of inspection could be efficiently done. But as the factories increased in number, some modification of the system was found necessary, and so we organized what we call the factory syndicates. Foreign gentlemen who have visited our province, and inquired thoroughly into the matter, have written to French and English papers that they never saw such a good organization. We have a law, passed by the Provincial Legislature, permitting any number of factories not less than fifteen and not more than thirty to form themselves into a syndicate. To each syndicate thus formed the Government gives $250 a year towards paying for the services of one inspector, and the syndicate must also pay $250—$500 being the amount that we have estimated to be necessary for this purpose. The inspectors of syndicates have as their superiors one general inspector who instruct them and direct them in the performance of their duties. The syndicate inspectors spend the whole season in going about among the factories in their charge giving instructions in cheese and butter-making, making tests of patrons' milk, and so on We understood that the English market demands cheese uniform in quality, color and method of packing. We thought that the best way to obtain that uniformity was to have one system of inspection all through the province, and the plan we adopted of forming these syndicates is working well. In 1891 we had 10 syndicates, in 1892 we had 14, and in 1893 we had 28, representing 700 factories. This year we expect to have at least 36 syndicates. In the first year of our Association we opened what we called a model factory. We gave a grant of $300 to a man who had a good factory on condition that we might invite all cheese-makers to go during the summer and spend a few days there learning the best methods of making cheese. But we found that this was not sufficient, and we opened in this factory a kind of school. This we ran for about two years, but found that still more was necessary. So we founded a large dairy school in St. Hyacinthe, in one of the best centres for cheese and butter-making in our province. This school was opened in 1892, and the first winter we had eight courses, which were attended by 214 students. In 1893 we had 268, and this year, so far, 69 with 328 applications. So we have 550 makers who have passed through the school. In this school we give diplomas to our inspectors of syndicates. These inspectors must take a four weeks' course, and pass a very close examination. We believe that this school is proving itself the best thing our Association has done for dairying. The young men come from all parts of the province. They show themselves eager to learn everything in connection with their trade, and when they return to their own parishes or townships they become the means of attracting still further attention to dairying and actively promote sound practice in relation to it. We have organized for the first time this year what we call our dairy institutes. We found that the annual meeting of our Association were attended only by people from the neighborhood in which the meeting was held. We were asked if it would not be a good thing to have local institutes organized by our directors, who number twenty, in their several districts. We adopted the suggestion and began the meetings last fall. Each director organizes the meeting in his own district, and presides over it when it is held. We find that many cheese-makers attend these meetings who would not attend the annual meeting of the Dairymen's Association, and thus we are able to disseminate throughout the province the knowledge we have gained in relation to dairying during the year. We have, more recently, entered upon a new phase of this great question, following what is being done in this province, by forming a Good Roads' Association. We organized this Association at our last convention at La Beauce, and we hope very soon to get our charter from the Legislature. I suppose you would like to know how it is that we have been able to advance so rapidly in dairying in Quebec. There are three things that have helped us. In the first place we have a very good climate in summer for dairying, especially for butter-making. We have almost invariably cool nights even in the height of summer, and therefore we are able to keep our milk in good condition with comparatively little trouble and expense. For instance. I find, on looking at the meteorological report, that the average temperature in May last year was 52.3 degrees at Quebec and 57.8 degrees at London, Ont. In June the average was 61.3 in Quebec and 67 in London ; in July 64.6 in Quebec and 71 in London; in August 56.3 in Quebec and 64 in London. The second thing that has helped us is that in Quebec we have the very best of grasses. I have heard even men like Mr. D. M. Macpherson, whom you all know, declare that we had the best grasses for both butter and cheese-making of any section they had visited. The quality of our grasses is due to the coolness of our climate, the abundance of moisture and the absence of drouth, and also, in the eastern part of the province to the salt emanations from the sea. In that section of our province they never salt their cattle. Then we have excellent cattle. I want to tell you that we have the French Canadian cow. This cow was not at all well known until a few years ago. This breed of cattle has been in our province ever since the early French occupation of the country. The French-Canadian cow is rather small, but strong, healthy and hardy. She has all the good qualities that we require in our cold climate. In the discussion on tuberculosis yesterday I heard it stated that close confinement and inbreeding were causes of this disease in cattle. Tuberculosis is unknown among our French-Canadian cattle. I do not mean to say that no animal of that breed has ever been attacked by tuberculosis, but I say that when such a thing occurred it was due to some very special cause. For instance, I knew of one cow contracting tuberculosis through eating the refuse from a house where a poor woman was dying of consumption. This French-Canadian cow has many good points. One of these is that she gives rich milk. I see by your reports that for the last ten years 10.44 pounds of milk has been necessary in order to make a pound of cheese. In our syndicates we found that, on the average, we made a pound of cheese from 9.52 pounds of milk. The French-Canadian cow gives very cheap milk. I am sure I shall surprise you by the report I am about to make to you of the performance of one herd of 24 of our French-Canadian cows, registered. This record was made during the year 1892-3 under my own supervision.

Expenses.		*Receipts.*	
Hay, 4,480 bundles at $6	$268 80	63,193 lb. milk made into cheese	$531 19
Straw, 2,240 " " 3	67 20	4,616 lb. milk made into butter	323 20
Bran, 4,800 lb. " 84 cents	40 32	9,125 lb. milk sold at 12c. per gal.	109 50
Pasture at $5 per head	120 00	3 calves fattened on milk, at $4	12 00
		6 calves raised partly on milk @ $3	18 00
Total expenses	$496 32		
		Total receipts	$993 89
		Total expenses	496 32
		Net profit	$497 57

The manure is estimated to pay for the cost of keeping the cattle. The average yield per cow was 4,697 lb. of milk, and the net average profit per cow is $20.75. We find that the winter ration cost an average of 7⅓c. per cow per day for 210 days, and the summer ration an average of 3⅓c. per cow per day for 150 days. This gave an average cost of ration of 5⅔c., making the average cost of 100 lb. of milk 44c. And that milk, you will remember, averages over 4 per cent. of butter-fat by the Babcock test. I believe we are as well off to have 4,000 lb. of milk at 44c. per hundred as to have 8,000 lb. of milk at 88c. There is less trouble in keeping this class of cows than in keeping some others that might yield more milk. They can be kept very well on dry food—hay, straw and bran. We have better cows than those in the herd of which I have been speaking. I have here the photograph of one of our cows that has given 8,500 lb. of milk in 10½ months, that milk testing 5½ per cent. of butter-fat. She weighs 770 pounds. This cow took all the prizes in our agricultural exhibition in Quebec. With such milk you will not wonder that we go more into butter-making than you do. In order to encourage winter dairying the Provincial Government offers a bonus for every 100 lb. of milk brought to the butter factories to be made into butter—5c. in November, 10c. in December and 15c. in January and February. The results are as follows:

Winter 1892-3, 33 factories in operation, 141,251 lb. of butter made.
" 8193-4, 61 " " 251,609 " "

showing an increase of 28 in the number of factories and 110,353 lb. in the quantity of butter produced. We have had a continuous fight since the organization of our Association, having to contend against the evils of bad milk, bad makers and bad factories. We have always carried on a strong fight against bad milk, trying to teach the farmers through the farmers' clubs. I have spoken to you about how to get good milk. Since the Babcock tester has come into use we have used it to make tests everywhere. This has been one of the most efficient means to prevent bad milk being brought to the factories. Our system of syndicate inspection has been the means of greatly improving the quality of the milk, and has practically put a stop to the practice of watering the milk. Then we had a fight against bad makers. Some were ignorant and some dirty. Many of them had no genuine desire to be cheese-makers, but thought they could be cheese-makers without knowledge. Many were so ignorant as to think they knew something when they did not. A young lady, confessing to the priest, once said that she had looked in her mirror and thought she looked pretty. She wanted to know if that was a sin. The good father told her it was not a sin, it was an error. (Laughter.) It was no sin for these ignorant cheese-makers to think they knew something, but it was an error, and one that we found it hard to overcome. Some of our cheese-makers were dirty, and I am sorry to say that some are dirty still. I have found that this evil is not confined to our own province. The cheese-maker ought to be the cleanest man in the world. But it is with dirtiness as with ignorance—those who are really the worst persist in knowing nothing of their fault. And we have had to fight against bad factories. I have shown you that we have a large number of factories in our province—1,273. We have too many. You will be surprised at my saying that. I would far rather see only 700 factories in our province, and all first-class. We have been going too fast. Everybody wants to have a factory. There are three causes that lead to the establishment of undesirably small factories. The first is jealousy, which, as you know, is one of the defects of human nature. When one of our men has succeeded with a good factory somebody is pretty sure to want to share his profits, and, for that purpose, to open a factory near by. Where one good factory can be well maintained two will starve. Then there is a spirit of revenge. The maker finds some farmers bringing in bad milk. He warns the farmers, but there is no improvement, and so he sends them away. The farmers feel much aggrieved, and desire to be revenged upon the cheese-maker. So they go to their cousins, uncles and nephews and gather the milk from their farms and start a factory of their own. They carry on the work in an old shed with a second-hand plant and a fourth-class maker. Such a factory cannot turn out good butter or cheese. This is one of the worst things we have to fight against in Quebec. Again, there are many people who think they ought to have the factory at their own door. They build a factory where they can only expect to receive a thousand pounds or so of milk. On that basis they cannot carry on a first-class factory for the simple reason that there is not enough in the business to pay a first-class maker, and for the further simple reason that it is almost impossible, as every practical man knows, to make as good cheese in a small factory as in a large one. The question of how to prevent the multiplication of these small factories is an exceedingly difficult one. I think we must try to starve them out by asking the trade to make a greater discrimination than they do now between good and bad cheese. We trust to the diffusion of knowledge mainly for the development of this dairy industry. In order to diffuse knowledge we avail ourselves of every means within our reach. We send the report of our Association to each of our 1,081 members as well as the report of the Dominion Dairy Commissioner, and the bulletins of the Experimental Farm. We issue bulletins of our own now and again in order to inform our farmers of any new methods that come to our knowledge. We also send to our members the official journal of agriculture issued by the Department in our province. All have access to our dairy school on payment of a nominal fee of one dollar. The dairy school is appreciated. We had arranged to have 9 courses of 30 students each, but we must manage to have 36 students in each course in the regular season, and also to have one or more extra courses in May. We give lectures everywhere. We have the help of the Dairy Commissioner, Prof. Robertson, who has done much for our province, and I, as his assistant, have received the widest latitude in doing everything that will benefit the dairy industry in Quebec. Our society is taking a new course with regard to butter. In studying the latest figures we find that the English cheese market last year consumed a total of $25,000,000. But of this only $20,000,000 is open to us, for England buys $5,000,000 of cheese elsewhere not including cheddars. Last year we furnished $12,500,000 worth of cheese to England or about 60 per cent. We find that since 1889 there has not been a large increase in the importation of cheese, the figures being 1889, 213,600,000 lb., 1893, 232,600,000 lb. The increase in imports from Canada has been from 88,500,000 lb. to 133,500,000 lb., in the same period, or 11 per cent. a year. Now we see a danger in that. If we continue to increase at the same rate, in four or five years we shall have more cheese than the English market wants. We seek to impress upon our cheese-makers the necessity for making a better quality of product, to improve the quality rather than increase the quantity. We want our people to go into the production of butter. We find that we have in England a market of $117,400,000 for butter and bacon, against a market of $25,000,000 for cheese. The skim-milk that is left with us after sending out our butter will make splendid bacon, thus developing a new source of profit to the Dominion. We are asking our Provincial Government to give us a bonus upon every hundred pounds of butter we send to England, and we are also petitioning the Dominion Government to provide cold storage to take the butter to market. We hope that you will give us your help in that effort. We have to compete against two countries that send much butter to England—Denmark and Australia. We are in no condition to compete advantageously with Denmark, because it is only three days' journey from the English market. But we can lay the butter down in England a fortnight after it is made if we can get a fast line of refrigerator steamers. The butter cannot be brought from Australia in less than two months, so you will see we have a good chance of selling our butter in competition with that from Australia if we will only send over what the English market demands. The English people do not like stale butter, and I think they are right. We can make the article they want, we can get it to the market in good condition, and there is no reason why we should not secure as large a share of the butter market as we have already secured of the cheese market. The cheesemen are interested in this because if too much cheese is made it will reduce the price. We in Quebec have learned many lessons from you gentlemen, and we thank you for the good you have done us. I hope I have been able to show you that we are diligent pupils, and that we are making progress. My only regret is that we cannot receive from you all the help we should like to receive. We cannot invite you to come and teach our people at our conventions, for our people, as a rule, understand only French, and so they would not understand you. But we can work together not the less, French and English, to build up the dairy industry in the Dominion, and make it clear to all the nations that Canada is the best dairying country on earth. I thank you all for your kind and appreciative hearing.

The PRESIDENT: I think you will agree with me that one of the best addresses we have ever heard in this Association is that just delivered by our friend from Quebec. I will now call upon Mr. Derbyshire for a short address.

Mr. **Derbyshire** : The President asked me to occupy five minutes with a criticism of the address to which you have just listened. I am sure it has given us all the greatest pleasure to welcome to Ontario our friend Mr. Chapais, who has done so much to promote the dairying industry in the neighboring province. I attended one of their dairy meetings in the Province of Quebec only a year ago, and they had a large and very enthusiastic meeting. Our President was there to tell them what we were doing in Ontario, especially in this western peninsula. Mr. Chapais spoke of the need for clean, bright, educated cheese-makers. We all agree with him as to the importance of having good men in our factories. With the facilities that have been furnished free by our Government for their education, every cheese-maker in this province ought to become thoroughly qualified. Every cheese maker ought to attend the Dairy School and make himself familiar with the business he expects to make his living at. Mr. Chapais also spoke of the evil of small factories. That is a point we need to look carefully after in Ontario. If there is one danger greater than another it lies in the establishment of too many small factories that cannot have the proper facilities for the business, cannot hire first-class men for the work, and must bring us great discredit in the British market. Allow no small factory to be established. If your factory is not the best in your locality, make it so, and employ the best cheese-maker you can find, and give him fair wages. In this way we shall be able to meet our competitors without fear. Mr. Chapais has given us valuable information of the progress of dairying in his province, and valuable hints for our own guidance in the future. I am sure we listened to him with keen attention, and that we shall profit by what he told us.

The **President** : I would ask Mr. Dillon, who has been in Prince Edward Island lately, to address the meeting.

DAIRYING IN PRINCE EDWARD ISLAND.

Mr T. J. **Dillon** : I was sent to Prince Edward Island by the Dairy Commissioner to take charge of a new factory which the farmers were building at New Perth. The object was to find out if the people could not be got to engage in dairying. I had to come back to Ottawa in connection with the work of the Department, and have been very glad to avail myself of the opportunity to attend this Convention and meet many friends again. Our President tells you that the Ingersoll district still leads in dairying. Our friend from the east, Mr. Derbyshire, would like us to understand that Leeds leads. There is a little island province down in the Gulf of St. Lawrence that is following both pretty closely. Let me tell you what has been done. It was the 13th of May, 1892, when I crossed the Straits of Northumberland. When I arrived at New Perth, where the new factory was to be, I found that the material for the building was not even on the ground. The contract was let, however, and the work was soon completed. On the 22nd of June we started with 35 patrons. Before we closed that season we were receiving milk from 143. That season we had 506 boxes of cheese for export, besides what we sold in the local market. I attended eleven meetings in the summer of 1892, and then came back and took charge of the butter-making at the Mount Elgin factory. When I went back to the Island we had 11 factories, and that year we turned out 5,612 boxes of cheese for export. During the season of 1894 we ran 16 cheese factories and 2 creameries and had for export 10,400 boxes of cheese and 60,000 pounds of creamery butter. Three of the cheese factories are running as winter creameries to-day. While we are proud of what Ontario has done, we take some satisfaction in contemplating our own progress in this great dairy industry, an industry that has been the means of tiding this Dominion over a time of depression. Improved means of communication have opened up markets for all kinds of farm produce, but no farm products are so profitable to-day as cheese and butter and bacon. Co-operative dairying has done more than this —it has been a mighty force in the education of the people. In Prince Edward Island we are striving to make a reputation for sending out the finest cheese and butter that can be had in any country in the world. The facts I have given you will indicate the interest taken by the farmers in this work. I do not suppose that one-tenth of the people in that province ever saw corn grow before 1891. They thought it would not grow in that latitude. The Dairy Commissioner gave out three-pound bags of seed with instructions to the people how to plant it and cultivate it, and I am glad to be able to tell you that we get good accounts of the result. But I know one man who received a bag of corn and it is on a shelf in his house still. He has a mortgage on his farm, and that mortgage will stay there until he plants corn and goes into dairying. The people down there are also sowing beans, sunflowers and rye. Rye was a strange plant to them. It will make plenty of bedding for the cow and a good bed is one of the means to promote the cow's comfort and so increase the flow of milk. We have recommended the growing of these crops and the people have acted upon our recommendation. Some of you may think the people of Prince Edward Island very backward in not going into dairying before. They were engaged in other pursuits. The province is surrounded by the sea, and their first attention was given to ship-building. When the ships were built they had to be manned, and Prince Edward Island has turned out some of the best sailors this world has seen. A great many of us Canadians do not realize the value and importance of our fisheries. The Prince Edward Island fisheries are worth more than all the Atlantic coast fisheries of the United States. But the people of the province have turned their attention to dairying in earnest. I have here the statements of our factories, which can be seen by any who are interested. We took milk last season from 1,368 patrons. The average of milk required for a pound of cheese during the whole season was 10.57 pounds. The cheese we made were held and sold in the fall. We have not very good shipping accommodation yet, but we hope next year to have monthly sailings to Great Britain, when we shall be able to sell earlier in the season, and more regularly. I have been asked to say something about the practical part of cheese-making, and shall occupy your time for a few minutes longer, with your permission. One of the most important points in starting to make cheese is to have everything in order. I do not speak only of the weigh-can, scales, milk-run, cheese-vat, heating apparatus, and so on, but the outside surroundings of your factory. If you have any old hoops that are of no use, don't have them about the place—burn them. Don't let them stay about the yard to be a harbor for weeds and rubbish. Often in cheese factories when one of the boys has worn a pair of boots out he will throw the remains of them out in the yard. Get rid of such things, and make the place tidy. It is very important to get good milk. Our cheese-makers should not be held responsible for many of the failures in making cheese. The blame should rest upon the patrons for bringing bad milk. Wages for cheese-making in this section have been cut down very low. Men who will make good cheese and guarantee the quality ought not to be asked to make it for less than one-half cent per pound. But the man who makes this other kind of cheese ought to pay for the privilege of making cheese. Patrons should be careful to send good milk. The cheese-maker will not send a patron's milk home if he can help it. If he thinks that he can make cheese that will at all pass inspection, he will accept the milk. If the maker returns a can of milk the patron is pretty sure not to take it as a lesson and improve the quality of his milk, but to send his milk to another factory, or to get up an agitation to have another maker. But that is not right. If your milk is returned ask the maker his reasons. You are both interested in turning out good goods; so don't quarrel, but come to an understanding. When the cheese-maker gets the milk he should heat it gradually, and stir it gently. I have seen men in factories stirring milk while it was heating as though they were trying to churn it. Stir it often and gently, so as not to let the cream rise. Many makers ripen their milk too much. I cannot tell you exactly what the proper stage of ripening is, for that depends upon circumstances. But don't get it too ripe. Put enough rennet in to coagulate fit for cutting in thirty minutes on the average—in less time than that in the spring. Nearly all the knives in use cut the curd into too large pieces. Of course we have the knives now, and they have cost us a good deal, so we must make the most of them. But I think that knives for cutting curd in the vat should be made finer, and so made that they can be well sharpened, so as to cut the curd instead of bruising it.

The cutting should be done carefully, so as not to disturb the mass, for disturbance means loss; it means that more milk will be needed to make a pound of cheese than would be needed if greater care were exercised. You will often see men hurrying in the morning because they want to get away early in the evening. That is a mistake. If you want to get away soon, "go slow" in the morning at the cutting and stirring stage. After you have cut it three times—that is as often as I would cut unless it was a fast-working batch—turn it over gently, removing all the curd that is adhering to the inside. Stir it around again before you turn the heat on the curd.

Mr. GOULD : For how long ?

Mr. DILLON : Ten minutes.

Mr. GOULD : Wouldn't twenty minutes be better ?

Mr. DILLON : If the milk is in real good condition it would. Then commence theating and run the temperature up slowly ; don't try to cook the curd in too short a time. It would be better to take forty-five minutes or even an hour from the time of starting to cut before you start to cook, if the milk will allow you.

A MEMBER : What per cent. of fat does the milk in Prince Edward Island show ?

Mr. DILLON : It shows 3½ per cent. the season through.

A MEMBER : What is your average price for cheese ?

Mr. DILLON : In 1892 it was 10⅛c. ; in 1893, 10 52c., and in 1894, 9¾c. per pound. I would cook the curd to 96° or 98°—never above 98°. Draw the whey when the curd is firm and shows a little acid by the hot iron test. I would use every test possible ; your cheese can't be too good, no matter how many tests you use. If you want to get body in your cheese you may think it a good idea to cook high. That will give you body enough, but it is likely to make your cheese dry and not so good in flavor. If you want to get a good-keeping cheese you can get it by stirring fairly dry and adding a little more salt.

Mr. McLAREN : What would you do with milk containing 4½ per cent. of butter-fat ?

Mr. DILLON : I would work the curd finer, but I would not cook above 98° in any case.

Mr. McLAREN : How much would you salt ?

Mr. DILLON : Three pounds to the thousand pounds of milk.

Mr. DERBYSHIRE : And if it was 4½ per cent. ?

Mr. DILLON : In that case 3½ pounds to the thousand pounds of milk.

A MEMBER : How about the cheese made at Guelph, and spoken of in the bulletin discussed yesterday ?

Mr. DILLON : I believe the same quantity of cheese was used in every case.

Mr. BALLANTYNE : The bulletin would indicate that the cheese made from extra rich milk would be soft and heavy. But extra salt would neutralize that. The samples of cheese I have brought here to-day show that cheese made from rich milk is of a superior quality altogether.

Mr. DERBYSHIRE : The point, then, is that 4 per cent. milk will make a greater quantity of curd, and so requires more salt ?

Mr. BALLANTYNE : No ; the same quantity of salt was used at Guelph—as I understand it—for the same weight of curd. But the curd from rich milk will retain more moisture, and consequently requires a little more salt to give it the desired texture.

Mr. DILLON : Another point is that you should be very careful to get good salt. I think that inferior salt has been the cause of a good deal of poor cheese even in western Ontario. My advice to cheese makers is this : If you can't get enough for making cheese to enable you to get first-class material, better drop out of the business. There should be some understanding among cheese-makers as to the size of cheese they will make, so as to have uniformity. I would recommend weighing the curd into the hoop. If you can get a cheese from 68 to 70 pounds I think it will be the best for the province on the whole. In curing you should have a place where you can maintain an even temperature, and one that can be well ventilated by means of windows in the top. Keep your cheese out of direct drafts. This cheese, which the President has had brought to you as a warning, looks as if it had been exposed to drafts from the time it was taken from the vat, and then put in an open place to cure. Be particular to get good boxes, and specify the weight of each cheese on the box. Let the figures be stencilled on neatly and always on the same part of the box. Some put the figures on in pencil merely, but such marks are liable to be rubbed out. You should see to it that the people who are to deliver the cheese to the railway stations have clean waggons. Put the cheese on the waggon on end, not on the side. Now a word more with regard to cheese-makers. The cheese-makers have been invited and urged to go to the Dairy School. That is very good advice. But some of them, perhaps, have not the means to go to the Dairy School. Those who have the means, I have no doubt, will go to the School. They will lay out this money in order to qualify themselves for the positions they seek to fill. But they should be compensated. They are called upon to fill responsible positions, and I am satisfied that many of them are not as well paid as they ought to be. I think it is about time the cheese-makers should follow the example of those in other professions and callings, and form themselves into an association for the advancement of their own interests and the defence of their own rights as a class. Experience proves that organizations of this kind are a success, whatever may be said to the contrary. I promised the President that I would occupy only five minutes, and I have gone much beyond that time, so I will close by thanking you for the kind hearing you have given me.

BRANDING THE DATE OF MAKE UPON CHEESE.

Mr. Ballantyne: I suppose there is hardly an individual in Ontario who has read the newspapers at all but has observed the discussion now going on with reference to dishonesty on the part of dealers in cheese in this country, shipping cheese to England for August cheese that were made in July, for September that were made in August, and so on. It has even been said that they were shipping June cheese for September, but that is hardly likely. Of course, those in the trade in Montreal protested their innocence. I happened to be there last week. Each of the dealers declares himself an honest man, but says it is the other fellow who has been doing wrong. Now, we want to prevent any fellow doing it. We are proud of the character of our cheese. We want to maintain that character, and we do not want to swindle or impose on anybody. The evil complained of can be stopped by branding the cheese as they are taken out of the press. That mark can never be erased. I do not pretend that I am more honest than other dealers, but I am anxious that we should all be kept strictly honest. This bad practice, if it exists, is of no benefit to the trade at large, but a great injury. It may benefit the individual dealer by giving him profits to which he is not entitled, but none of the benefit goes to the factoryman. I wish to move a resolution on the line of the suggestion I made, which I am sure will be unanimously adopted. The question is one which the Legislature should be able to deal with, but in the meantime we can take action ourselves. Let every factory get the necessary stencils—the cost will be very little—and use them, and an end will be put to this fraud. I move, seconded by Mr. John Geary:

> "That in view of the fact that recent reports would seem to indicate that Canadian cheese made during one month have been sold on the British market as the make of another month, therefore, be it resolved, that this Convention of dairymen, assembled in the city of Stratford, would strongly recommend that such regulations be adopted and such laws be enacted as will compel our cheese factories to brand on each cheese the date and name of the month upon which the cheese was made."

The resolution was put and carried unanimously.

The Convention then adjourned until the afternoon.

THIRD DAY—AFTERNOON SESSION.

In the temporary absence of the President in attendance at meetings of committees the afternoon meeting was opened under the chairmanship of Mr. A. F. McLaren, First Vice-president.

The Chairman referred to the two exhibits of cheese on the platform, one a very inferior cheese with the cloth barely sticking to it and the other only a section in a very much injured box, and called upon Mr. Wheaton to explain their "natural history."

Mr. Wheaton: I cannot give you a history of how these cheese were made, you must judge of that for yourselves. This part of a cheese was received in London with a shipment of 150 boxes. Part of it was broken or cut off and the remainder was put in this box, the actual weight of the cheese marked on the box and shipped with the rest. The other cheese I got in London on Friday last. It was in the possession of a man in the local trade. It came from a factory west of London. The object in bringing them here was to show the factorymen what to avoid. It is of the first importance that our cheese should be uniform in style and package—as far as possible—and that everything about the packages should be clean and neat, and that the packages themselves should be strong. These are little things, but if they are neglected the result is sure to be injurious to our reputation. I do not say that many samples such as these could be found, for I think our makers, with few exceptions, are above such work as this. There is no need for this if the maker will pay attention to what he is doing.

A Member: Sending out such a cheese as this (the part cheese in the bad box) must have been a mistake. No maker would intentionally send out such a cheese. There is no need for it; for it could have been divided among the patrons. As to the other, I think the weather got too cold before the maker quit making. There are a good many of our factories in which you cannot make much better cheese than this when the weather gets cool. But the cheese-makers do not make the factories, and many cannot help themselves. The maker in this case probably got too much acid, and then allowed the curd to get cold.

The Chairman: He should have a better factory.

Mr. Derbyshire being called upon said: I am glad we have been given this opportunity to discuss practical matters affecting the cheese-makers, for in reality this is a cheese-maker's convention. Now, the man who made this cheese could not have been a master workman, or he would not have received the milk at a time when he could not work it up to perfection. This illustrates the truth of what I told you about making cheese until too late in the fall. In cold weather no man can make a fancy quality of cheese. It will not do to endanger our reputation even if we have the prospect of getting a high price for the time being. The cheese-maker should be furnished with a good building, one in which he can control the temperature. Many cheese factory buildings, even in this Empire Province, are not what they ought to be. They are set up on stilts, with a great space below in which foul odors collect. There should be a good building, and in it you should have a good cheese-maker, and you should provide him with all the best appliances and facilities for making good cheese. The cheese-maker should be as much an educator in his district as the schoolmaster; he should call on the patrons of his factory and talk about the proper care of their milk and the care of their cows, so that the factory may have a uniformly good quality of milk. But many of the factories and cheese-makers are not content to attend to their own business. They think they can make money by speculating in their own goods, and so they hold their cheese for a price that will suit them. They do so to their own loss, for the best quality of cheese on the market is that which has been shipped when in the best condition. No cheese should be held more than three weeks after they are made. Give the people in the old country to understand not only that you are going to supply them with goods of the highest quality, but that you want their custom for yourselves, and that you are going to be ready to supply them steadily each week with finest goods at market prices. You may not see the importance of this, but let me give you a simple illustration. Suppose there is one man from whom you get your groceries. It is the best plan to deal with one man of high character to whom you look to keep the goods you desire. Some Saturday evening you go to him and tell him you want ten pounds of sugar and five pounds of tea. His answer is, "The prices of these goods will be higher next week, so I will not sell them to you to-day." That is practically what we tell the English buyer when we refuse to send our goods forward when they are at their best, and the natural result is that the customer is driven to buy his goods elsewhere, and when our goods reach the market they are not in the prime condition demanded by the people who are to pay for them. I speak from my own experience, and I have doubt that the experience of other buyers has been the same as mine. The goods that I sent forward week by week, as they were at their best, caused no trouble about price or anything else. The people who bought were delighted with the quality of the goods. But some factories thought they could do better. They would not take 10c. nor 10½c. in August; they would not take 10¾c. on 1st September. The result was that they held the cheese until they accumulated, and after long waiting we bought all at 9¾c.—except when extra fine, and then we paid 10c.—and sent the whole kit off together. Follow those cheese into the store of the Liverpool merchant. The first he strikes, probably, is a November cheese, made in too low temperature and not properly cured. The next is an August cheese, a little off flavor, a little out of condition. He comes to the conclusion that there is something wrong with cheese from this country. It was out of such conditions as this that the complaints grew of false dating of cheese. It was done by the salesmen who were holding cheese in the factories and refused to sell. Did these people make money? Not a solitary man made a dollar by holding his cheese. They lost money, and they injured the standing of the trade as a whole. Let us be ever jealous of our reputation, and determined to improve it by supplying still better goods to our customers. As Mr. Chapais told us, we must do away with the small factory, which cannot have the proper facilities for making cheese, and we must stop making cheese in the fall. Do not be tempted, by an increase in price, to turn out inferior goods. The man who makes the best goods will find his goods accepted at a fair price, while the inferior goods of his neighbor are rejected at any price. The men who are turning out fancy creamery butter are taking the true course in their own interest. They are educating the people to appreciate good goods. We must educate our own people, as we have educated the English people, to distinguish between things that differ. Once they have learned what good butter is like, they will not use an inferior quality. Take high-salted butter made by some unfortunate woman, with three children and two hired men to take care of. She has neither the time nor the facilities to make good butter, and she is not to be blamed if she does not succeed. While we are making first-class goods we can increase our profits and meet competition by reducing our expenses Extend the cow's milking season so as to cause her to give you a profit practically all the year round. Cheapen the feed you give the cow, not by reducing its milk-producing quality, but by adopting the methods you can learn at these conventions. Build silos. Grow thirty tons of corn to the acre—you can grow that as well as you can grow fifteen tons to the acre. You can grow corn for ensilage at a dollar a ton, and two tons of it, with other things to make a balanced ration, will give more milk than a ton of hay, and at less than half the cost. Your profits are to be expected, not from high prices in the British market, but from lessened cost of production. You have splendid opportunities. The Government has done everything possible. The Dairy School at Guelph, is your school; it has a staff of the best teachers that money can hire, and its doors are open to all who wish to qualify themselves for dairy work. If you get a man qualified to do good work, don't cut down his remuneration so as to drive him out of the business. Expect good work from him, and pay him a fair price for it. In this way we can do the best work and maintain our reputation.

Mr. PEARCE: Several have suggested to me and to others that the cheese-makers at these conventions are probably not getting the attention they deserve, and that they have not had the opportunities they ought to have of discussing live questions of interest to themselves. I therefore move, seconded by Mr. Geary :

> "That in view of the fact that very little time has been given during this convention to the discussion of those subjects which relate particularly to the work of the cheese-maker, and recognizing the importance and value of earnest discussion by our makers of the best methods, relating to the manufacturing of cheese and the management of a cheese factory, therefore be it resolved that Messrs. Harold Eagle, H. White, T. B. Millar, J. A. Gray and Robt. Johnston be a committee to arrange and prepare topics relating to practical cheese-making for discussion at the next annual Convention."

The resolution was carried unanimously.

HONESTY IN DAIRYING.

By F. M. Davis, Potsdam, N. Y.

The maxim expressed by a witty philosopher that "Our virtues lose themselves in our interests like rivers in the sea," I do not think universally true. There are some men and many women who would scorn to do an ignoble or dishonest act without reference to resulting gains or losses. Daily observation, however, compels the admission, that, with many of us, honesty seems to be conditioned by self-interests and the law of ethics is looked for in our account books and the market reports.

It is a fact we rail with great emphasis at the Armours and the Goulds specifically, and all millionaires generally ; but if the foundation truths were admitted, it would be apparent that our condemnation of their methods, results quite as much from inability, and not always from indisposition to follow where they lead. Playing pins for keeps is a sinful business, especially when the other boy wins. Were it not for a very prevalent desire to get something for nothing, professional swindlers would find fewer victims, and filled cheeee would no longer handicap the honest factoryman's market.

It is every day experience that where honesty is not the most remunerative policy, honesty has a hard time of it, and that too, without regard to time, person, place or circumstance. Only our objective vision is usually more occult than our subjective vision. We do not fail to characterize in fitting terms, the grocer who weighs us out only fifteen ounces of sugar for a pound, or the merchant whose yardstick was made of unseasoned lumber ; but whoever heard a dairyman complain because he could get only seven and one half pounds into an eight-pound pail. In short the man who gets the best end of any bargain is *pro tanto*, an optimist. His version takes in the roses and leaves out the thorns. By the universal law of contraries, the other man, the party of the second part in that transaction, is *pro tanto*, a pessimist. Where his eyes rest, only the thorns and blighted flowers appear.

I know that the declaration which we piously and patriotically read every fourth of July, affirms, "That all men are created equal." The affirmation is not only true, but, as claimed, it is axiomatic, also in the sense in which it is there made. All men are equal before the law and equally entitled to its protection. It does not follow however, that all men are equal in intelligence, capacity or virtue. If they were—if all of us could be equally successful in driving sharp bargains, or dropping (euphimisms and circumlocution) equally successful in dishonesty, there would be no profit in it for anybody, and hence no motion in that direction.

But because the vast majority of us are less successful in roguery than the small minority, it becomes necessary for the general welfare, to restrain the few, by erecting barriers against their cupidity. And when we come to do this, I can discover no distinction in ethics, between counterfeit coin and counterfeit butter with those who do not, or cannot distinguish between the genuine and the spurious ; either may be equally current, if not equally valuable.

If I can, at an expense of ten cents, fabricate an apparent facsimile of a half dollar, which some unsuspecting landlord will accept for a dinner, who shall say no ? Certainly not the man who serves me oleomargarine for butter, or chicory for coffee, or sells my wife alum for cream-tartar, or those who aid and abet, or vindicate and uphold them in so doing.

It is a question of practical ethics and we need not concern ourselves much with the speculations and arguments of the philosophers as to the basis and origin of ethical distinctions. They do not agree. If your curiosity is excited in regard to these questions, or you should need a counter-irritant for too close attention to the problems connected with the construction of a properly balanced ration for milch cows, you may refer to your encyclopædia, and read there, that Hume found a uniform for moral distinctions, in general utility; that Hobbs saw no natural distinction between right and wrong, but averred that pleasure and pain are the natural guides for human action, and consequently, that only the civil power, could place bounds and limits to human greed and selfishness.

On the other hand Grotius and Pufiendorf argue that the moral distinctions do not depend upon human convention, but exist in the law of nature. Others again can find no efficient solvent of ethical problems outside of Divine revelations. The outcome is much the same, to whichever school of philosophy we may attach ourselves, for practically neither the law of nature, nor general utility, nor the revealed will of God is of much effect in dairying till reinforced by the civil power in the form of statutory enactments, with a prosecuting officer and a prison not too far in the background.

The question is, therefore, along what lines, and upon what principles, and how shall we seek to correct our own views, mould public opinion and influence legislation.

Kant seems to have reduced the rule which should govern in practical ethics to its lowest terms in the following formula: "Act only on such a maxim as may also be a universal law." The men who by adding water increase the quantity of milk they may deliver, or by judicious intermixture of sand makes nine pounds of sugar weigh out ten pounds, or increase a crop of berries by elevating the bottom of the boxes, or make full cream cheese from skim-milk and stale butter, furnish a maxim to justify some other man. As an instance, the man who by dexterous manipulation makes a one dollar treasury note resemble a ten dollar bill and disposes of it as such. Yet in the latter case the man is rewarded by a term of five years in state prison, and in the former cases there are those who contend that the buyer and the consumer should look out for themselves.

The men who do such things and the law which shelters and protects are equally at fault, because neither "act upon such a maxim as may also be a universal law."

It may be that this formula when applied to the different professions and occupations of men may require somewhat different maxims, but as far as dairying and its allied industries are concerned, I am persuaded that the words, "to each man his own,"—to each animal its own—or generally, *suum cuique*, furnish a rule which might well become a universal law and constitute the maxim by which to test all our methods and proceedings. Only by living up to it can there be "honesty in dairying." For example, whether we sell milk for consumption as such or *pro rata*, or sell it at a cheese factory or creamery, let each man receive his own and no part of another's. It is no new thing to be told that neither quart cups nor platform scales have ever furnished satisfactory or adequate criteria for judging the value of milk. Until quite recently they were the only available aids in that direction. The chemist was too far away and his methods too slow and too expensive. Now we have tests as accurate and simple as those applied to grading wheat and corn, for determining the relative values of milk, and because of its varying values there is less good sense in marketing or pooling milk by measure or by weight than there would be in buying or selling wheat, or barley, or corn, or hay without regard to quality.

I have read very carefully the reports of the Dairy Commissioner of Canada—may the powers that be, whether ordained of God or otherwise, grant that it shall not also be the last of its kind in Canada. In this report, which is as interesting as history and as instructive as geometry, I find hard and earnest work. When you consider the work of your valuable Dairy Commissioner you will agree with him in honest goods. The dishonesty practised in some dairy sections in the United States tends to discredit the dairy products of the whole United States. Give to each his own, not more, not less. In the United States it behooves the men furnishing the milk to insist for themselves upon their rights, and to see to it that each receives his own. The factorymen have no interest in the matter and will not have until the men who produce the better grades stubbornly refuse to be further robbed. The producers of poor milk are willing to have milk of better qualities pooled with their own and will do nothing looking to more exact methods. Draw out of the pool, let the factories run on thin milk say a month, and you may be sure they will come to your terms and give to each his own. Worse, infinitely worse, than all the direct losses resulting to individuals, is the demoralization and degradation of the men and women, and the very cows themselves, upon present practices. They offer special premiums and rewards for direct dishonesty, and irrevocably tend to the perpetuation and breeding of unprofitable cows. Therefore it is that our special maxim should become a universal law—to each his own—and the Babcock test will give each his own. So when we market our products, whether it be "full cream" or "skim" cheese, regular or "patent" butter, let each be sold for what it is according to its own deserts and not those of something different. I am not writing this to contend that butterine is inferior to butter, but to each its own. Let every "tub stand on its own bottom," and its contents be sold and swallowed for what they are. What about golden June butter in January? I know that accidents are likely to occur when one skates on thin ice or bathes in deep water. Nevertheless "butter color" is one of the main factors, and it would be cowardly to go around it with closed eyes. And market reports? Does each receive its own there? By no means. As a matter of fact, the butter which brings the highest price in the open market is made in private dairies, but the quotations do not recognize these sales. Neither do they recognize a very large number of sales of dairy butter at "fancy creameries" prices. Just why this is so I do not know. The fact remains, and it is the occasion of much discouragement, and heavy pecuniary losses to private dairymen. Because of this fact a very large amount of strictly fine butter required for local consumption is sold in local markets at from three to ten cents below its actual market value, and there is scant stimulus for the production of improved qualities. When a creameryman consigns a shipment of butter to his commission house and receives returns at or near the highest quotations reported for the day of sale, he feels measurably content, but let the account of sale show three to five cents off, and an investigation occurs to ascertain the cause and apply the remedy. The same rule may apply to the private dairymen. Let actual sales be reported. Gentlemen of the press and the commission houses, in sending out your market reports please remember our maxim and give "to each its own."

The tired and fire-tested Secretary of this Association, who manages the programmes of these meetings, little thought what a mine he was opening when he assigned me as a topic "Honesty in Dairying," and to confess the truth I little thought how impossible it would be to cover the ground in the usual time allotted for papers. It seems as though the more I wrote the more there is that cannot be omitted.

There are cows themselves, and the other half of the herd. They have some interest in our topic, and in fact "honesty in dairying" should commence with them. To each its own. To be successful we must be honest with the breeds, and with each individual and with ourselves. We do not expect to gather grapes from thistles, nor figs from thorns. Every cow has her limitations, precisely as thistles, thorns and grapevines. Like poets, cows are born, not made.

Here is one that by the secret alchemy of her digestive organs can transmute grass and grain into butter and rich cheese in profitable ratios. Perchance her next neighbor in the stable is not built that way. Do the best she can, and evermore it requires ten cents' worth of feed to produce nine cents' worth of milk. Here as elsewhere to each her own. The slaughter-house for one and long years of usefulness in the dairy for the other and her progeny. But let there be a fair trial before passing judgment. You could not condemn a locomotive engine for not drawing a train of cars when there was no fuel in the fire-box, or no water in its boiler, or lack of lubricants in its boxes. Neither is it a fair show for a cow when you feed her only marsh hay and shelter her at the side of a rail fence. As a cow she has a right to demand of you the conditions and environment necessary to the normal performance of her alloted functions. And she, too, has a right to be judged by quality of performance as well as by quantity. Wherefore? Because I believe that this Association should take advanced ground in favor of "honesty in dairying;" that it should discountenance fraud, deceit and peculation, with which we all are more or less troubled, with as much certainty and vigor as it pronounces anathema upon the more distant violations of the ethical laws which do obtain in manufactures and commerce; that it should memoralize our Legislature to perfect and make more stringent the laws now upon our statute books relating to the adulteration of milk, butter and cheese, adding such new provisions as experience has demonstrated to be alike necessary to protect the consumer and the producer, and to secure to all men "each his own." The menace to future success in dairying lies more in the absence of sound business ethics among dairymen themselves, than from any and all other sources combined. For these reasons and others like them, if dairymen will in all things act upon our maxim—to each his, her or its own, we shall have better cows, better products, better prices, better men, better women, better laws, better society and better things generally.

Prof. Robertson being called upon, said: I am to say something to draw you out and to get you to discuss matters yourselves. While listening to Mr. Dillon this morning I thought I would like to say something about one quality in cheese which is very undesirable, and the cause of which is but little understood. Every cheese buyer objects to a flavor in cheese which he calls "bitter." That "bitter" flavor, which lowers the value of cheese so much when it exists, prevails most in the fall. (Here Prof. Robertson put a tryer into one of the cheese sent up by Mr Ballantyne). This cheese does not taste like milk; it tastes like an excellent, exquisite cheese. I take a small piece of cheese, (holding up a piece three-quarters of an inch long), that is the home of at least ten thousand tiny creatures; they are living there. In a piece of ripe cheese of that size there would probably be a hundred thousand of them. The flavor of the cheese is the product of their labor—we call the process, fermentation. We do not understand all about this matter, but we are learning about it. One day a man came into my office; he was a big man, a magnificent specimen of humanity. He said he was a dairyman and asked if I was busy. I said that if he wanted to chat I could see him after 11.30 in the evening, but if he wanted to talk business I was not too busy for that. He was an unsophisticated, fine man. He went into many particulars about his family, but at last he told me that the cream lately had somehow turned bitter and, as they made their living by dairying the matter was a very serious one to him. He asked me if I had ever heard of anything like that before. And when I said I had often heard of such a thing he was surprised. I told him what to do to prevent the cream from becoming bitter. Then such a change as came over that man! I could fairly see the load of care roll off his shoulders. "Then you don't believe in the witches do you?" he said. I do not believe in that form of life, but I do believe in the other form I have been telling you about now. If you keep cream in a temperature of from 45 to 50 degrees for three or four days it will become bitter. The reason is that this form of life which gives the bitter flavor thrives and multiplies at that temperature. But let the cream be either colder or warmer and these creatures cannot multiply. The cheese-maker has to hold over some curd. He thinks that if he keeps it too warm it will sour. So he keeps it cold even in the summer time. Then he puts the curd back in the vat with its increased number of these things that make bitter flavor, so that you have this objectionable flavor in the whole batch of cheese. If he would press the whey out at once and then keep it fairly warm he would find that there would be no bitter flavor at all. The reason is that these creatures cannot live where it is dry. They live best in milk, next best in cream, next best in curd, and next best—but hardly at all—in cheese, unless it is very moist. Many cheesemakers think it does not matter how the curing of the cheese is continued. But it does, for if you keep the cheese at the best temperature for those things, the more of them there will be in the cheese; and a bitter flavor will be the result.

A Member: How long will it be before cream kept at about 50° will get bitter?

Prof. Robertson: I cannot tell you that exactly, but if you put it down to 40° it will keep for several days.

A Member: Will it be harder to bring the butter in cream kept at 40°, or will the quality of the butter be worse by reason of keeping the cream so cool?

Prof. Robertson: Cream that has been kept very cold needs to be ripened one day before it is churned. I have had cream frozen to keep it good and found it yielded butter as easily as any other, and that the butter was of as good quality as any other.

Ripen such cream by adding a teacupful of buttermilk for every pailful of cream, leave it eighteen hours at a temperature of 70° and then churn. I took down nine samples of butter to exhibit to the Board of Trade in Montreal. They picked out one as being the finest of all, and it had been made from cream that had been frozen solid.

A Member: What about sending the whey home in cans?

Prof. Robertson: I would rather speak about a principle than about the application of it in cases where I cannot know all the circumstances. I think that every man who knows the principle should apply it in his own case. I find that whey is very apt to become foul. If that foul whey is put into the milk-cans there is great danger of the foulness being transmitted to the cheese. There ought to be some great gain in view to compensate for the risk run in such a practice. But there is no gain, for the whey thus taken home is not so useful for feeding as if fed near the factory in a fresh state. But I am told that people still want the whey. Very well; you cannot reason with people who want what is manifestly opposed to their own interests.

A. Member: What is the whey worth?

Prof. Robertson: It is worth one-half more when fed fresh near the factory than when fed on the farm next day. But sentiment may be in favor of taking the whey home. In this country, as in every other, profit must bow to sentiment. Nearly 80 per cent. of the factories in Canada send the whey home to the patrons. I would like to see the figures reversed and only 20 per cent. of the factories continue this practice, and those the factories where patrons deliver their own milk and take the whey back fresh. One hundred pounds of whey fed in the best way will produce two pounds of increase in the live weight of swine.

A Member: What kind of man could take the whey home in the same can as the milk was to be carried in next day without causing injury to the cheese?

Prof. Robertson: The man whose wife is active and strong and who has a hatred of anything dirty. But I want to talk to the cheese-makers, for they are not blameless in this matter. I hold that the cheese-maker is responsible for the condition of the whey until it gets into the milk can. When the cheese-maker washes out the whey tank twice a week and every time makes it as clean as he would a vessel he was to drink out of, we shall get rid of one element of danger. If the whey tank is properly constructed and placed, it is not difficult to clean it. I have been in a whey tank under ground often. I went into it myself because the job of cleaning out the whey tank was such a dirty one I could not get any man hired to undertake it. But I could not get that tank as clean as it should have been. The whey tank should be above ground so that it could be cleaned twice a week. That would not remove the risk of injury of which I have been speaking, but it would lessen it.

A Member: At what temperature should cream be ripened?

Prof. Robertson: If it is kept at 75 for eight hours and then allowed to cool gradually for four hours, it will usually be ripe for churning.

A Member: If milk is frozen before going to the butter factory can you get a fair sample of it?

Prof. Robertson: The freezing does not separate the butter-fat. Milk should be thoroughly stirred before a sample is taken.

A Member: Does a composite test once a month give an accurate account of the butter-fat?

Prof. Robertson: Yes; if the samples are taken from each delivery of the patrons' and the whole kept sweet for a month, a composite test would be as good a test as one made every day. I think you will find that in practical work the best plan is to take a sample every morning and make a complete composite test once a week.

A Member: Does it make any difference whether in making the test the sample is taken from the morning's milk or the previous night's milk?

Prof. Robertson: All the milk sent by the patron at one delivery should be thoroughly mixed and a sample taken from the whole. As a rule the morning's milk is richer than the evening's milk. The shorter the time between the milkings the richer the milk, as a rule.

A Member: I know you are right. Can you tell us why the milk varies in quality from one day to another?

Prof. Robertson: I do not know. I have investigated the matter to the extent of about twenty thousand tests with our cows. I find that in the same stable, with the same feed, with the same conditions in every way as nearly as I can judge, the milk of one cow will vary to the extent of as much as 1¾ per cent. of fat.

A Member: There is a great variation in quantity also.

Prof. Robertson: There is a variation in quantity but not to the same extent as in quality.

A Member: Do you think we shall ever find out? If we could learn the means to prevent these variations it would be a good thing.

Prof. Robertson: I doubt that we shall ever learn the reason or reasons. It seems to be something relating to the principle of life, and too subtle for us to discern or comprehend. It is with a man as with a cow—some days he can do more work than others, but he cannot explain the reason.

A Member: Does freezing milk injure it for making cheese?

Prof. Robertson: Not if it is ripened after being frozen.

A Member: What is a fair average percentage of butter-fat for milk for a whole season?

Prof. Robertson: We found 3.56 per cent. a fair average.

A Member: Would 65 degrees be high enough temperature for a curing room for curing May cheese?

Prof. Robertson: That would be about right to get the best flavor. But when May cheese are wanted on the market quickly the temperature might go as high as 75 Fahr. At that temperature you run the risk of getting a flavor half oily and half sweet. But we can take that risk sometimes for the sake of getting cheese cured more quickly.

A Member: Can you tell us something about the growing of rape and its value?

Prof. Robertson: I think Mr. Pearce can tell you more about that than I can.

Mr. Pearce: I think farmers should give more attention to rape than they have done hitherto. It is so easy to cultivate and can be put in with so little trouble and expense that it costs very little to try it. The value of it is more generally recognized among stockmen and sheep raisers than among dairymen. Every sheep raiser knows, or ought to know, its value for feeding lambs. I believe that for soiling purposes also it is most valuable. As a catch crop or a crop to plow in it is one of the best things I know of. I have a small trial ground of five acres, on the outskirts of London, which I have owned for the last five years. It has had nothing but a little ashes and bone meal and rape plowed in every fall. We have a good many onions, which are off about 1st August. As soon as they are off we prepare the ground and sow rape. By 1st November, it is fifteen inches high. You can imagine the benefit from plowing that in. That land will grow to-day three times as much per acre as it would five years ago, and it is worth twice as much as it was then.

A Member: Is rape injurious to the flavor of milk?

Mr. Pearce: I would not advise the feeding of it to milk cows. You would not, would you, Professor?

Prof. Robertson: No.

A Member: Suppose I had a field of rape, and saw that there was going to be frost before my sheep could eat it all, how could I preserve it for a while so that it could all be made use of.

Mr. Pearce: You could only let it stand; then after the frost had passed away you could put your sheep on it again. Mr. Sheppard, of Bothwell, had twenty acres of rape which was being used by his lambs. There was a severe frost in the early part of November. But the rape was in good condition, the weather having been favorable up to that time, and after ten days of frost the weather moderated, the lambs were turned into the field of rape and ate it as well as ever.

A Member: When do you plow the rape in?

Mr. Pearce: Let it grow as long as it will. Just before it is going to be caught by the frost plow it in.

A Member: Would you recommend sowing it in the spring?

Mr. Pearce: No; don't sow it until July or August.

Mr. Wooley: Some years ago I sowed rape and I thought it was years before the soil recovered. The opinion of our neighborhood was that it was an injury rather than a benefit. We did not plow it in, but pastured it. In England they sow rape and hurdle stock on it. That is a different thing. Here stock is pastured on it, and waste manure where it is not wanted.

Mr. Spencer: My father sowed rape for many years. I remember one field where we fed our lambs on rape for nine or ten years in succession. It had a little manure each year. And for five or six years after that you could see a better crop on that field than on the one next it.

The President: I will now call upon our friend Mr. Gould, from Ohio.

A TALK UPON CORN ENSILAGE.

Mr. Gould: I believe what has been said before now—that we need not expect to get rich by increase in the prices of butter and cheese in the market. The question is whether we can cheapen the cost of production. I say we can. The way is to have a better cow and feed her cheaper. A cow needs two kinds of feed—carbohydrates and proteins. A farmer wrote to our Station Director in Ohio asking what would give a balanced ration for dairy cows, and was told to give five pounds of carbohydrates to one pound of protein and albuminoids. The farmer, not knowing hog Latin, wrote back "What is them things." So the Director explained that "carbohydrates" meant corn stalks, and albuminoids and proteins meant oil meal. The man wrote that he supposed the Director got his $2,500 salary to say these things so that a body could not understand him. What we have to do is to furnish these things to the cow in the cheapest and most easily assimilable form. Now, so far as the carbohydrates are concerned, we get these in the best form in the corn plant. I raise a crop of timothy hay and feed it to my cows. I find the cows assimilate only 61 per cent. of its starch. But when I feed corn stalks they assimilate 75 per cent. If we are to raise the corn plant we must understand something of its nature. Was the corn plant invented in Canada or Ohio? No; it is a tropical plant. The nearer we can come to tropical conditions the better will be the growth of our corn. We must grow it amidst the decaying remains of other plants, and in great heat, and we must give it sunlight and air all round it. We have not in Ohio soil of 93 degrees of heat which the corn ought to have, but on fresh turned sod we find the ground 8 degrees warmer than elsewhere, so we give it that advantage at least. Don't plow deeply. The roots of the corn plant that seek moisture go down about four feet anyway, so you gain nothing but only wear out your horses by plowing fifteen inches instead of seven. If a plant is to grow in rows it is better to plant in drills instead of in hills. Don't cultivate your corn. I don't tell you not to work in your corn field. Kill the weeds; that is all you have to do. Do the hoeing before you plant. Make the ground fine and friable. After that never cultivate more than one inch deep. We plant our corn in rows 3½ feet apart, putting in for field corn one kernel every ten inches; if for ensilage, one kernel for every six inches. If you go over the field with a harrow or fine horse rake you kill the weeds, for they germinate in the topmost inch of soil. If you go deeper you kill the weeds that have germinated, but you bring others to the surface. Leave those seeds where they cannot do much harm. Weeds take up the moisture and rob the corn of what it ought to have. An acre of corn ought to have 300 tons of water to make a good, lusty crop, and you don't want weeds to take 150 tons of it. If we can get 4,000 pounds of digestible dry matter to an acre of corn we get the material as cheaply as by any means we know of now. Don't waste that crop. Many save the ears and throw the stalk away. But the stalk is the more valuable crop in the proportion of 55 to 45. A man might as well throw away half his corn after he had grown it as lose the stalks. It is said that the cattle will not eat the stalks. If they are saved in good condition the cattle will eat them as well as any other part. The only reason why they are rejected by the cattle is that sometimes they cannot be chewed easily. Professor Robertson will tell you that while there is 4,000 pounds of dry digestible food matter in an acre of corn, there is only 175 pounds in the leaves and only about 900 pounds in the stalk above the ear. We cannot afford to waste all the rest. To save it in form acceptable to the animal we must cut the corn at the right time. The day the corn stalks are nicely tasselled out we may represent the feeding value of an acre by fourteen. The day the ears are nicely formed and beginning to show the kernels on the cobs, the value is twenty-eight. The day the corn is formed, and you find yourself dreading the frost, the value is forty-two. Now, many say that if we cut the corn too soon the ears will mature after the corn is cut, taking the sap out of the stalk. That is not so. Better run the risk of a frost than cut too soon, because a light frost would only injure the leaves, which are only 175 pounds out of 4,000 pounds of feeding value. The greater the maturity of the corn, if it is not too hard for the cattle to chew easily, the more you get off each acre. The best way to get out the feeding value of a crop is through the silo. If you ripen your corn you have to harvest it, husk it and grind it. You can put it in the silo for what it will cost to grind it. When you put the corn through the mill 20 per cent. of it becomes indigestible. You say you save it in the manure, but what you save is starch, and no plant can live on that. In the silo the loss is from ten to fifteen per cent. I used to spend my time defending the silo, but to-day it needs no defenders. Last year more silos were built in the United States than in any five years before. We have it down so fine now that any man can have a silo in his barn at a cost of fifty cents a ton of storage capacity. I will feed twelve tons of ensilage against six tons of the best hay. The agricultural reports contain all sorts of directions for building a silo. The cheapest box that can be made air-tight is the best silo. You can build it of a single thickness of matched lumber, or of two thicknesses of cheap lumber, half rough, with tar paper between. If there is no danger from surface water a clay floor is the best. Draw the earth from the centre up into the corners and against the walls all round, making a cup-like bottom. This will relieve the pressure at the bottom of the walls, where it would otherwise be greatest.

Continuing, Mr. Gould gave a description of the method of filling the silo, as at the meetings of the other Associations.

A MEMBER: How do you cut your corn for the silo?

Mr. GOULD: We have tried many machines, but we have gone back to cutting the corn by hand.

A MEMBER: Can you retain the food value of the sugar in the ensilage?

Mr. GOULD: Yes; we grow the Virginia corn, because it is most highly charged with sugar. The more sugar there is the less chemical change there will be in the silo. We get 3,000 pounds of sugar to the acre, and sugar, as you know, is a great preservative.

A MEMBER: How much acid is there in a ton of ensilage?

Mr. GOULD: I asked Professor Babcock that, and he said there was just about enough to fizz a glass of soda water. Some say that ensilage has a peculiar odor. That is the odor of the hydrochloric acid, and that is exactly what you must have in your own stomach to digest your food. That odor represents one stage of digestion.

A Member: Which cutter do you use?

Mr. Gould: The one that is built nearest home, so that in case of a breakdown I can get it most quickly repaired.

A Member: How about a concrete silo?

Mr. Gould: Don't do it. These stone walls will be cold, and you will tell your neighbor next spring that you had bad luck with your ensilage.

A Member: A concrete wall is not the same as a stone wall.

Mr. Gould: No; it is worse.

A Member: How about clover ensilage?

Mr. Gould: Clover is a strong, nitrogenous plant. We have discovered how to make ensilage of it. You must use more water to get a perfect ferment. Put on five pails of water for every ton of clover. Don't just throw the water on after you have got all in, but let it spray over the carrier. Your neighbor who tells you your ensilage is going to rot and your cattle will lose their teeth—well, set him to carrying water.

A Member: What does your ensilage cost you?

Mr. Gould: I never grew 90 tons to the acre, as you hear about sometimes. I have grown 20 tons. But one year with another 16 to 18 tons is a good crop, and to put that in the money outlay, hiring help, engines, etc., is a little less than $4 an acre, that is to say, 25c. a load.

A Member: What length do you cut the ensilage?

Mr. Gould: Half an inch. If I could get a machine to cut it into quarter-inch pieces I would.

A Member: What is the cause of the white mould in the silo?

Mr. Gould: I have laid it to everything, but I'm not sure about it yet. I have put the same question to our best men in the United States, and none of them can give me an explanation that is wholly satisfactory to me. I believe it is the result of smut on the corn.

Mr. Blayney: Do you throw away pieces on which there is smut?

Mr. Gould: Yes, sir; throw away the whole stalk. The man who feeds the knives throws aside a smutted stalk when he finds it. Now and again a stalk will get past in spite of him.

Mr. E. Caswell, being called upon to address the meeting, said that though now out of the Association he had been a member during its early stages, and felt that he must get down to this meeting to show that so far as his feelings were concerned he was still in line with those who desired to advance the dairy interest. He had been for many years a member and for four years president, but he had never attended a meeting which had given him more pleasure than this one. He congratulated the Association upon the success of the convention, and especially upon having as President one so capable in taking charge of a meeting, and so earnest in his advocacy through the press of the dairy interest. There had never been so large a meeting of the Association as this.

The President said that there was no man to whom the dairy interest in Ontario owed more than to Mr. Caswell. It had been a pleasure to them all to have him present, and to be assured of his continued interest in the Association, which he had done so much to establish.

Mr. Derbyshire said that he had attended many dairy meetings in Ontario, but this was the best he had ever known. He attributed the success of the meeting largely to the untiring labors of the President, who, he said, had proven himself a most capable chairman.

On motion of Mr. Ballantyne, seconded by Mr. Caswell, a resolution was carried expressing the Association's sense of loss in the death of Mr. H. S. Losee, of Woodstock, one of its oldest and most helpful members.

Resolutions were passed conveying the thanks of the Association to the Grand Trunk Railway, to the speakers—Messrs. Gould, Everett and Chapais being specially named—and to the Mayor and citizens of Stratford.

On motion of Mr. J. F. WILLIAMS, seconded by Mr. GEARY, Messrs. L. R. Richardson, of Strathroy, and J. H. Wooley, of Simcoe, were appointed delegates from the Association to the convention of the Good Roads' Association, to held in Toronto on the 7th and 8th of February.

The convention then adjourned *sine die.*

CREAMERIES' ASSOCIATION OF ONTARIO.

OFFICERS FOR 1895.

President, - - - - - - D. Derbyshire, Brockville
1st Vice-President, - - - - - Wm. Halliday, Chesley.
2nd Vice-President, - - - - - T. J. Millar, Spencerville.

Directors:

Division No. 1..............J. H. Croil, Aultsville.
Division No. 2..............A. Campbell, Ormond.
Division No. 3..............Chas. Johnson, Athens.
Division No. 4..............John Sprague, Ameliasburg.
Division No. 5..............A. A. Wright, Renfrew.
Division No. 6..............A. A. Allan, Alpine Dairy, Toronto.
Division No. 7..............John S. Pearce, London.
Division No. 8..............W. G. Walton, Hamilton.
Division No. 9..............John Hannah, Seaforth.
Division No. 10..............A. Wenger, Ayton.
Division No. 11..............W. Snider, St. Jacob's.
Division No. 12..............James Carmichael, Arva.
Division No. 13..............John Zinkann, Wellesley.

Secretary, - - - - - - Mark Sprague, Ameliasburg.
Treasurer, - - - - - - R. J. Graham, Belleville.

TENTH ANNUAL MEETING

OF THE

CREAMERIES' ASSOCIATION OF ONTARIO.

FIRST DAY—MORNING SESSION.

The tenth annual convention of the Creameries' Association of Ontario opened in the Town Hall, Chesley, on the forenoon of January 8th, 1895.

Mr. J. H. Elliott, the village reeve, having been called to the chair, Mr. D. Derbyshire, of Brockville, President of the Association, delivered the following address :

PRESIDENT'S ADDRESS.

It is a great pleasure to meet with you this morning and carefully review some of the work done by this Association for the past year. Besides holding our annual convention in Belleville in January, 1894, your President and other members of the Ontario Creameries' Association have addressed a large number of meetings in various sections of the province, and we believe good results will come of our efforts in educating the farmers to go more heartily into dairying, especially winter dairying, to keep only profitable cows, weeding out the poor and unprofitable ones, growing corn, building silos, building good stables where their stock can be kept comfortably. Our various meetings have been well attended and great interest manifested. Our instructor, Mr. Sprague, has done splendid work, visiting all our creameries and giving practical instructions, and we feel that the special instruction given to new creameries this year has been of great importance. A large number have been established, and from the character of the buildings and improved apparatus put in, we feel greatly encouraged for the future. One of the largest creameries in Canada, if not in the world, has been completed at Renfrew. While this Association has rendered excellent service to the butter interests of this province, its usefulness is still nearer the beginning than the end. The needs of the butter-makers for such assistance as this Association can render are growing greater and more urgent. There are many new districts where butter-making creameries require the visits of our travelling instructor ; and the butter industry of this province as it grows larger needs to be kept constantly to the front, through the agency of this Association. The record of progress made justifies all our claims, and warrants us in expecting continued support from the Government and increasing recognition from the farmers. Nineteen winter creameries and eleven regular creameries have been established last year, making 74 regular and 31 winter creameries now in operation in this fair province. The interest awakened in winter dairying, and its speedy enlargement, are matters for congratulation and hope. The prices for creamery butter have been comparatively low. An occasional year of low prices seems inevitable in all food commodities. It is a measure of consolation to know that the price has not fallen so low as to leave no profit. Although it has reduced the profit, the low price will not be without some compensating advantages. New markets have to be won for our creamery butter. To get into some of these and secure a good footing, the prices at first must be attractively low from the consumer's point of view. The quickened demand which followed the year of abnormally low prices for butter in 1878 sustained prices at a good level for ten years afterwards. The losses to individuals that year were severe and serious, but the after gain to the country was substantial. Our aim is to encourage farmers to a more general adoption of co-operation in dairying, as it provides for a more efficient and economical method of carrying on a large business, and it helps to gain a reputation for excellence and uniformity, which will enable us to capture foreign markets and leave our own better able to take care of any surplus butter we may have. I would specially urge all our dairymen to the great importance of cheaper production, as a means of our ultimate victory in the world-wide competition that civilization, railways, steamships, telephone and telegraph impose on us. We must have a longer season of production by co-operative methods, making only the finest quality, which will give us the assurance of a permanent demand. We must push for recognition of a good name and high quality of Canadian creamery butter. Educate our own citizens and buyers elsewhere, to distinguish between things that differ, even as one star differeth from another in glory—dairy butter from fancy creamery butter. Thus beginning to realize on former labors, let us plan and labor, agitate and educate, until all our people set seriously about a thorough and lasting improvement in methods. Insist on every butter-maker having a practical education in one of our dairy schools, with a certificate showing his proficiency before you engage him.

I desire to thank the Hon. John Dryden, Minister of Agriculture, for his co-operation during the year just closed; also Prof. Robertson, Dominion Dairy Commissioner. We could not have held so large a number of meetings under the auspices of this Association during the year in various sections if Professors Robertson, James, Dean, Shutt, and others had not assisted us. I return them, on behalf of this Association, my sincere thanks. I also thank the officers and members for timely advice and assistance. I am particularly well pleased with your kind reception here to-day and believe this meeting will be successful. (Applause.)

COMMITTEES.

The President then named the following committees:

Order of Business.—Reeve Elliott, A. Wenger, W. Halliday, R. J. Graham.

Finance.—Messrs. Sprague, Wenger and Zinkann.

Nominations.—Messrs. Wenger, Millar, Walton, Graham and Wark .

Resolutions.—Prof. Robertson, and Messrs. Croil, Walton and Mickle.

Legislation.—Prof. James, Deputy Minister of Agriculture, and Messrs. Mickle, Wm. Halliday and Wenger.

The President's address was unanimously adopted, and the Convention adjourned until 2 p.m.

FIRST DAY—AFTERNOON SESSION.

The convention resumed at 2 p.m., when the President said: We are somewhat disappointed that the speakers who were to have addressed this large audience this afternoon have not yet put in an appearance. Meantime I think we cannot do better than take up the subject of caring for the cow, and discuss that matter. It is certainly the most important subject we possibly can discuss in connection with dairying. At four o'clock Mr. John Gould, of Ohio, who has become famous as a dairyman, will be here to discuss the question of the silo, which is his subject for this afternoon.

CARE OF THE COW.

The PRESIDENT then delivered the following address upon "The care of the cow:" I presume there is nothing in the world that has been abused like the dairy cow. We must remember that her environments are equally important with her breeding. We hear people talking of blood in a cow and at the same time turning her out in the snow and expecting her to give a good flow of rich milk. The fact is that a cow is just a machine for turning food into milk. If you put peas into a fanning mill you would not expect wheat to drop out at the bottom of the machine; yet plenty of farmers will feed rye straw at night, which contains no milk-producing elements, and expect to find a copious yield of milk next morning. As I looked at "Little Brown Bessie" at Chicago, I wondered how it was that she gave such an enormous amount of milk; but when I came to learn about the environment placed around that cow—that she was kept in a compartment with screened windows in the summer time, which kept the flies out, and with windows in the winter time which kept the chilly breezes out, and that she was fed palatable food just to her taste, I could easily understand how it was. It was on account of her surroundings and of the kind care and treatment and succulent food she received, and which she more than gave back in the pail. Possibly you may think I would advise you to run right off to Chicago and buy that breed of stock. I do not want you to do anything of the kind. What I want you to do is to take the cows you have, house them properly, feed them regularly, and milk them regularly. The cow that you milk first at night you should continue to milk first every time, because a cow is educated to expect attention just as much as you are. Now, you have no idea that a cow would resent being passed by in her turn; but she does resent it, and if you pass her by to milk another one out of turn you will find the difference of the yield she will give you in the pail. What we would like most of all is that you should see to it that your cows have summer conditions during the winter months, so that they will not know anything about the cold weather and snow-storms which prevail outside of the stables. A great many people think a cow should have exercise to make her healthy, but every time you turn her out in winter you take off so much of her production. She will give less milk on account of being exposed to the storm and on account of not having proper care and protection. In the first place, I say it is of the utmost importance that we exercise care in selecting the kind of a cow we want. It does not matter so much about the breed, for everyone has a particular breed he fancies. Accustom her from the start to give milk for a long period of the year.

If you have a scrub heifer, and let her dry off in the fall, she is morally certain to dry off at the same time the next fall. Take another cow, give her good food and continue her milking for ten and a half months the first season, and you establish a habit of milking for a long time, which she will continue with proper care and feeding in the future. We have, of course, a great many heifers coming into the dairy that prove to be not exactly what we want. If you feed a cow for milking, and find that she takes on fat instead of putting what you look for into the pail, you should at once turn her dry, feed and sell her to the butcher, because she is a beef animal. Take another heifer, which utilizes all her feed in making milk, and you have a true dairy cow, and you should educate her to give all the milk she possibly can. Then another thing is that you should milk regularly. If you milk the cows at six o'clock this morning and at six o'clock to-night, you should milk at the same hours to-morrow and the day after, and every day. It will not do to milk an hour earlier or later, just because you want to go into town, or something of that sort. The moment you do that you are going to lose milk and destroy the habits of the cow. All your own arrangements must be secondary to the care of the dairy cow.

Now, you will all agree with me that this dairy business is the leading business in the country to-day. It is where all our money comes from. We cannot compete in grain-growing with the heathen Chinee or the people of Russia, who do not care about having a home or an education. They can grow wheat at fifty cents a bushel. We cannot do that here and educate our people. Consequently we want to let those people grow the wheat, while we turn our attention to high-priced articles such as butter and cheese. Then, by taking hold of the dairy business you will see how quickly we will have our farms in a better state of fertility. By having a lot of cows richly fed we will soon put our soil in a better state of fertility, so that we can grow the old-fashioned crop of wheat and hay. After you have got the habit of regularity of milking formed, and the idea that the cow wants something to feed on and that she has not got to live on faith alone, she will show forth her good works, and will not be expected to give milk merely because her mother did.

Then you want to build a silo. Get an old hay mow in your barn, and put your silo in the southeast corner, where the sun from the east and south can shine in three parts of the day. Have large windows in the barn, so that the sun will be sure to shine in. That makes your building healthy and keeps it warm. The earth which the Lord made more than 4,000 years ago is what you want for the flooring of your stable. You want to make this cow comfortable, so that you can keep her in the stable in the winter time. How many are there here who put their cows in the house in November and do not let them out until May? Do you not think they are better inside than out in the snow? What do you think, Mr. Rowland, about putting a cow inside in the winter time and keeping her there? Don't you think she is better there than out in the snow?

Mr. Rowland: The question with me is health. I take the experience of older men than myself. They say it is better for the cattle to be in so that they will get no chill.

The President: One of the most successful dairymen I know is Mr. Bissell, who lives near Brockville. He puts his cows in the stable in November, and takes them out just as soon as the grass comes up in April. He feeds these cows well. They have proper ventilation. A great many people think they have to turn their cows out for exercise. The minute you turn a cow out in winter that minute she drops off in her yield of milk. Then when you let your cow out to drink ice water she gets chilled with cold water, and you have to furnish her food to warm that water up to her own temperature. If you have a closed tank in the stable the water will become warmed to the temperature of the stable. By means of a tap you can fill your troughs so that the cows can drink this water whenever they want to. Another important thing is the salting of your cows every morning. This gives a regularity to the quality of the milk, and when you are churning it makes the butter easier to come. Some people think their cows should have a rest all winter. Does anyone mean to tell me that the man who has work to do every day of the year is not as well off as the man who sits in a corner grocery all winter and spits on the floor? (Laughter.) Let me show you the man who is healthy. He is up in the morning, and has his breakfast of good, wholesome food; does his day's work, has regular meals and a comfortable bed. That is the man who is healthy, and who has the muscle and nerve power and energy to do the work he ought to. Even if you keep a cow in a good, warm, comfortable stable, she has plenty of exercise if she puts fifteen quarts of milk in your pail in the morning and again at night, and if she does that you will not have to act as a dry nurse to her all winter without getting any profit in return. (Laughter.) Some people say: "We cannot afford to have our cows milking all winter, because we want them to give milk all summer, and it will not pay." We proved that it would. Mr. Bissell, near Brockville, who is a patron of Willow Factory, made $1,300 in about 9½ months from the cows which he keeps on one hundred acres of land. Now if we had in this province half the dairymen getting $1,300 a year from their cows on one hundred acres of land we would at once become rich. This province would boom, and every interest would prosper in consequence. There is not a manufacturer, banker, lawyer or business man but would profit if we had that additional amount of money in circulation.

I believe the cheapest food in the world for cows is ensilage. Possibly some of you do not agree with me, and I would like you to come forward and help us to discuss this question. My own opinion is that by means of the silo you can economize the food better, and have a cheaper production than in any other way. Have any of you had a silo in this part of the province? Have you, Mr. Rowland? I wish you would come right forward and let us have your views.

Mr. Rowland: I can assure you I am taken by surprise, but seeing that the President has suggested an idea which I am a little familiar with I will tell you my experience so far as the growing of corn and the producing of ensilage are concerned. There have been some assertions which we no doubt look at askance. The President has told us about a young man who started on a farm a few years ago and is doing so well. We would like to know the profit and loss of the transaction. I am satisfied that any thinking man will be convinced that dairying is one of the most desirable industries not only of this province, but of some five other provinces of the Dominion, and should be pursued by every agriculturist therein. There is a weakness in that respect in this part of the country. Here we seem to have been running after beef, and dairying has really been a secondary consideration. I am scarcely ready to say, however, that our cows have been fed on rye straw and allowed to run about the straw stacks all day in winter. They are better cared for than that, but not so well cared for as they should be. I can remember the time when the cow did not seem to be worth anything. At that time we could sow wheat in the spring in any shape and count in the fall on reaping 35 to 40 bushels to the acre. We did that for a good while—perhaps too long; and it has put us in a fix; but still we are going to get out of it, and we have taken to dairying. Several years ago we started a creamery at Walkerton and fought away, trying to make it successful, until last year, when it died a natural death. The system we had in paying for milk—whether the right system or not I am unable to say—was paying for the butter, and it did not give satisfaction. Since then we have turned our attention to the cheese-making business out in Brant, to the south here, which is principally a cheese township. When the wheat growing gave out we had to try to do something. First, we were going to grow beef. There were some doubts about success in that direction, and so we tried to run a two hand business, grain growing and beef raising. The whole country here has been growing grain and feeding for beef. The time for that having gone past dairying was the next step, and we have been making cheese for some years now, and it has been a success Five years ago dairying took another shape with me, owing to a bulletin issued by Prof. Robertson with reference to the silo, about which I have been talking for 20 years now. After long experience it was demonstrated that corn could be kept in a wooden, stone or iron box, but a wooden box was the most economical and practicable. I am sorry to say I did not adopt that form of silo, but through the advice of a friend made a brick one. The cheapness of food was the question. I found that on ensilage I could keep my cattle better than I did before on hay, straw and turnips—for about one-third less. (Hear, hear.) This is the fifth year's ensilage for me. Last year I took note of how I was progressing, and I found the cows had made me money all summer, and boarded themselves and me besides, making me a little money in the winter also. I found my milk cows and beef cattle both making me money. Some say corn is no good for beef, although good enough for butter; some say, again, it is no good for a pig—that, in fact, it is no good for anything. Now, I never saw ensilage in my life until I had it on my own place. To my surprise when I took the top off the first silo the ensilage was just as nice as when I put it in. When first fed the animals would resent it, but if you did not give them straw or turnips for a time it would not take long until every head rose when it was brought into the stable, and they had no trouble to eat it, and did well on it. I might throw hay in front of my cattle today and they would not touch it if I am working the ensilage, but would roar for their ensilage until they got it. I am not prepared to say they give 30 pounds of milk at a milking, as our President suggests, but they give enough for their feeding. In 1892 my milk went to the cheese factory for nearly six months, and for the remainder of the year my cows gave me nearly $46. That was the money they made me for their feed, and they kept me and raised some nine calves. In 1893 they made $36 a cow in the same ratio. They are taking the ensilage well and doing well; but one mistake I think I made last year—I fed my cows an average of nine lb. of grain per day during the milking season, but I found when they were not active in winter there was a tendency to grow fatter. This year I started to give 5 lb. of chop, and they are doing better. The corn I grow is Canadian dent. I am not prepared to say how much grain the cows are getting, because the grain is in the silo and I do not know what they get out.

Mr. AARON WENGER: Did you build your own silo?

Mr. ROWLAND: Yes. The one I built I was induced to build with brick by a friend who had timber on part of his own one, and said if he could get the lumber off he would build a brick one. I had a root-house 12x50 under my barn with 9 feet of stonework. The bins in the barn were suitable to divide in two and run up a stone wall around the building. I set in studding five inches from the face of the wall, and boarded up with inch lumber, and then veneered with soft brick. I made it 24 feet deep. I plastered it with common lime and sand, but found that it did not work. I lost, perhaps, about 6 inches of ensilage all around the wall. I was at a loss to account for this, but, from the experience of other men, think I have come to the correct conclusion, and the difficulty was that while the ensilage heats, the brick wall was cold and chilled the corn which came close to it, and caused a mildew which was not wholesome. Of course that part of the ensilage had to be cleaned out and thrown outdoors. The next year I thought I would try another plan. I had got a pamphlet from the Ross Manufacturing Company, of Springfield, Ohio, in which some man advocated the use of water-lime, and I water-limed my silo. The first year after this it did well. I plastered the walls perhaps three-eighths of an inch thick with water-lime. When we used the ensilage there was none of it bad except at the corners. Perhaps the only way to overcome that is to put something else in the corners such as dry hay. This year I have tried a change in my silo. It was 24 feet deep, 24 feet long and 12 feet wide. I have put in a partition and lined one part of it with seven-eighths pine, putting culled lumber outside and poor stuff inside, with tar paper between. In that ensilage there is not one speck of mould, but in the first silo it is affected. I am satisfied lumber is the proper material to use.

The PRESIDENT: Our experience is that you do not want a stone or brick wall, nor a hole in the ground, but to build your silo above the ground and of wood in order to have a dry, nice clean silo. In this way you have got it for the least money it can be built for, and if properly put in not one shaving of your ensilage will be lost. We have tried it year after year, and know it is successful. In building the first silo in our country they dug a hole in the ground and made two feet of stone wall, and then water-limed these walls; then made a door double boarded and cleated. They loaded the top of the silo with tons of stone and earth on top of this, and the rains came and the floods descended and the result was a rotten mass of manure. (Laughter.) That experience did no harm. For years and years we had trouble on account of that silo, until we began to build them in the bay of the barn. We threw some rye straw in the bottom of the silo, cut our silage and ran it in on top of this. At first we used to think it was necessary to have five or six men tramping this down, forgetting that the next ton would do more than 14 men to press down what had been previously put in. We, however, learned a cunning thing. The difficulty was to get the corners properly filled in. We built a platform at the top of the silo, and when this was filled the ensilage dropped off to the edge of the silo. Then when we had got enough in at one side we just reversed that platform half round so that the ensilage would "scoot" to the corners, and when the corners were filled up change it again so that the platform sloped to the centre, and then again to the corners, and so on.

Mr. D. M. HALLIDAY, Chesley, having been called to address the convention, said: I think it would have been better if the President had continued his remarks. I do not know anything on the subject of silos, because I never saw one; but I may say while on my feet that I am particularly pleased that the Association has held its meeting this year in Chesley. The work you are engaged in—trying to induce the farmers to lay hold of the dairy business—must certainly prove beneficial to the country. We all know that under present conditions farming is not what it used to be. There have been changes in every direction, and farmers, like others, have to keep up to the times. Just now you will find that our farmers are largely into raising fat cattle. A few years ago, when grain-growing gave out, they changed rapidly into raising cattle, and a good many of them made money at that. It happens now that there is necessity for a change again to something else. Cattle are cheaper now than formerly, and in all parts of this country, as well as the United States, farmers are making a change to dairying. Now, whether they will overdo it is a question for the future. One thing they will have to do is to make an article that will take the first place in the markets of the world. The products of farmers here have to come into competition with the best that is produced anywhere, and it is only the best articles which will be accepted. Some years ago, in the old country, they were satisfied sometimes to take an inferior article and pay the farmer good prices. You know that 30 years ago our cattle were not up to the degree of excellence they have now reached; yet you could get along with what you had then, but you cannot do it now. The way the farmers should consider this metter of dairying is that if we fail it is not because the country is not adapted to dairying. We know this by our successes at Chicago. Everything we sent took a first place. This shows that we can successfully meet the United States or any other country, and do as well or better than they can. If we keep up with the times there is no doubt we can hold our own in Canada, and in this county of Bruce we are not behind the people of Ontario or Quebec in any respect. You will find in Quebec they are turning their attention to dairying and making money out of it, and if that is the case there it may as well be the case here. We do not make much butter here in winter time, but if it can be done it should be done. It would not be nearly so difficult to make a change to dairying now as it was to make a change from grain-growing to beef raising, because a large percentage of the farmers have warm stables already. If it is only the matter of having a silo, that is easily arranged. Our land here will grow corn as well as it can be grown anywhere. (Applause.)

The President: The only difficulty I see is to convince the people that the butter business is the business adapted to our country. You will hear talk everywhere to the effect that we are going to overdo the business. Twenty years ago we heard the same thing when we began the cheese factories. You will find that this year we furnished 50 per cent. of the cheese which the mother country wanted, and if we made our cheese a little finer and were a little more careful in boxing and getting them in shape, we can just as easily ship 75 per cent. as 50 per cent. of the cheese which Great Britain requires. They prefer to have their cheese from honest people, made of honest milk, rather than to take it from the United States or any other part of the world where they have not got that style of people. (Laughter.) At Chicago I was proud of our prize cheese and our prize stock, but I tell you I was prouder of the bright, stalwart Canadian people than of anything I saw there, and it made one think that with our people and our country if we could only arouse enthusiasm we could beat the world in anything we put our hands to. (Applause.) But while we supply England with 50 per cent. of her cheese, we only supply 1½ per cent. of the butter she requires. That is not doing anything like we ought to dc. What is the trouble? The trouble lies in the cost of production. In one year you can lower the cost of producing milk one-half and at the same time keep your cow better. There is no feed in the world for cows like our June grass. What is our business as dairymen then? It is to make June conditions for the cow the year round, and we can do it by having the silo and a warm, comfortable, well-ventilated stable, which will be a nice, beautiful home for the cow. Be sure you give her a good bed to lie on. Be sure she gets a basketful of green ensilage corn. Feed her only twice a day. I have a neighbor who begins early in the fall and feeds his cows twenty times a day all winter. It gives him something to do. (Laughter.) Besides ensilage corn, give your cow a couple of quarts of bran in the morning and then a nice little lot of clover hay that has been cut rather green, and is well saved. As she eats this up she has no desire to hook—there is not much need for dehorning—but she begins to think of lying down and grinding that food over and manufacturing it into milk. No such returns can be got anywhere as from the dairy cow. The dairying business is exactly adapted to our climate and country. Do not argue that these cows which milk all winter wear out. Nor is there a particle of danger of over-production, but there is a lot of danger of a poor article being made that will stick and clog on the market. This winter dairying will give our young men work the year around and keep them at home. It will show them that the farming business is profitable and worthy of their best thought and attention, so that they will not have to go into town to become mere "counter-hoppers." (Laughter.) Don't you know that it is one of the most engaging businesses any man can have in this country! Prof. Roberts, of Cornell, pointed out to me a cow which gave 12,000 lbs. of milk in a year and said "I made that cow." He had selected carefully, and bred and managed intelligently, and that cow was the outcome of his work. What more inspiring occupation could you have for a young man in this country than raising a cow that would do better than her mother, and give more milk when fed on $2 worth of ensilage than on $8 worth of hay? In cultivating corn, Mr. Bissell found that by using an ordinary cultivator he was cutting off about 70 per cent. of the roots. Just plant a kernel of corn and watch what takes place. You will find a lot of the roots run straight down into the soil—some of them four or five feet downwards. What are they doing? They are searching for water to feed the plant. Another lot of roots run straight out from the stalk about an inch under the surface—some of them a foot outwards and some of them two feet; it depends on how you have tilled the soil. Their business is to draw the strength of the land and take it up to the plant. The minute you put in the plow between the drills you are cutting off these roots that feed the plant. Now, this young Mr. Bissell raised 30 tons of corn on an acre of land. He commenced to harrow it before it came up, having a harrow with the teeth set backwards. Mr. Gould, of Ohio, says he goes to the store and buys tenpenny nails and makes an old-fashioned diamond harrow, using only inch and a half stuff, and driving these nails through it set backwards He has a half-inch board that runs along behind the teeth, and when this comes along it turns the weeds out, with the roots sticking up to the sun. He does not cut any of the roots. He cultivates as soon as he can, and after the corn is up two inches, continues to cultivate with this harrow. At the Agricultural College they grew 20 tons of corn to the acre this year. At Ottawa they grow corn, horse-beans and sunflowers, and mix them all together in the silo. They grow these in large quantities, and cheapen the production of milk. The cows there are all milked every morning regularly at the same time. One of the things which woke me up to the importance of this matter of regularity was the method pursued by the Hon. Harris Lewis. I noticed in his stable a little clock, and just as it struck six the men, with clean, white aprons, came into the stable and each man sat down to his cow, the cows being numbered and the same men always milking the same cows. They told me the cows would give a larger quantity of milk on account of this system, as well as a better quality, and I believe that.

Mr. SAMUEL SAVAGE: Are such materials as black hay, or sun-dried corn, as good as corn ensilage for feeding?

The PRESIDENT: No; corn as you know, if allowed to stand out in the field, dries out. If you feed it whole you will find the butts of the stalks lying around in your yard. Possibly half your corn is wasted in that way. Now, if you put it through the knives, and cut it into half-inch pieces, and put it into the silo every particle of these butts will be eaten up, and they are the best part of the corn. You have an economy in that fact. Then the whole corn is not adapted for making so much milk, and the consequence is there is a loss in this second form. How do you plant your corn here?

Mr. JOHN JACKSON: Generally in drills three feet apart and one kernel at a time.

Mr. ROWLAND: That will depend on circumstances. Sometimes there are two or three kernels together.

The PRESIDENT: If you get stalks, say, from four kernels together, two of these have passed the rest in growth and taken the nutriment from the soil and monopolized the sunlight. The result is you will have two dwarfed stalks. There will be two stalks together with good ears and two stalks without any ears. It is just the same thing as where you find three lambs at one ewe. Two of them will "cuff" off the third, which becomes dwarfed because it does not get the milk. So where you have two or three stalks of corn together, one will get more nutriment and becomes more valuable, having a better stalk than the others. We have tried it and we know. It has been tried on the Experimental Farm and they know.

Mr. JACKSON: What sort of soil have they at Guelph?

The PRESIDENT: Clay, but with us it is a sandy loam. The latter is better for corn, but if clay is properly tilled and manured you can grow corn well.

Mr. Rowland: I tried the harrowing business. I put my drills 35 inches apart. Some of my neighbors this year have planted their corn in hills with the planter, and it is remarkable what speed can be made. The planter was not got to work to that perfection that one kernel could be dropped at a time, but sometimes 3 or 4 kernels would be dropped together, sometimes half a dozen, and sometimes a little more, and at the rate they were going they would plant three acres a day. I noticed that where there were three or four stalks together they would work nicely, but where there were half a dozen you would see some of them getting pretty hard pushed and not worth much. I have been sowing with the seed drill for the last five years. This last season I was convinced that planting is right. We cannot get the corn evenly distributed with any of our ordinary seed drills, because the corn is not all the same size. I am inclined to think if Mr. Gould was on some of our fields, with their boulders, with his harrows the teeth would be leaning some other way than backwards. I tried the harrow, and found that I thinned my corn out and sometimes there was a considerable distance without a stalk at all.

The President: How deep was your corn planted?

Mr. Rowland: About three inches. The trouble was in harrowing across. The lightest harrow I could find was a Bull with $\frac{5}{8}$ teeth, and it was too heavy and pulled the corn up. Perhaps the wire nails would be a good thing in a clear field.

The President: How deep do you propose to go?

Mr. Rowland: Perhaps an inch.

The President: Because if you go lower you disturb the roots.

Mr. Rowland: Yes. There is nothing I know of that will improve by cultivation, even in dry weather, so much as corn. You can make it grow. The President speaks of 30 tons to the acre. I am of opinion that I would rather have 15 tons of some kinds of corn to the acre than 30 tons of another. Two years ago I had 20 tons of one kind and 10 tons of another. I had been feeding the lighter corn with 5 lb. of chop, and was making 15 cents a day out of each of my cows. Then we came down to this large corn known as Red Cob. It was sown on the 24th May and cut on 30th September. On this you would find cobs six inches long, but no grain. After we began feeding it our women asked me what was the matter; that they were getting short of milk and could not supply the quantity required. We increased the quantity of grain, and trebled the quantity of chop, but the cows did not come back to the quantity of milk they had previously given on the lighter corn, and I never could get them back to it. My cows are ordinary animals of the Durham breed, and I found that with the increased feeding of grain they commenced to put on flesh. This smaller corn I am convinced, gave me more money than the other did. The cattle did not relish the larger corn so much —there was not the same taste to it—and, as I say, did not give so much milk.

The President: I would like to tell you the trouble. The large corn you planted did not mature. It was not the character of corn which would mature in your district. The consequence was you put into the silo an immature corn. It had no full grown ear, and if a corn stalk has any business in the world, it is to grow an ear.

Mr. Rowland: I cannot gather from the report of Mr. Gould's remarks at Gananoque, whether the class of corn he grows matures or not, but it makes a sweet ensilage. He grows Virginia corn, and says that is a sugary corn that will keep sweet in the silo.

The President: Any corn will keep sweet if it is mature.

Mr. Rowland: My corn will keep sweet in the silo some distance from the surface. Some of my corn this year was too mature. I find as soon as the air comes in contact with the silo there is a change, and it becomes acid.

THE FEEDING OF COWS.

Mr. John Gould, of Ohio, having arrived during the foregoing discussion, was invited to address the convention, and came forward amid applause. He said: I am very glad to be here this afternoon for several reasons, but chiefly because I come to you as a dairyman, to talk with dairymen along the lines of dairying. I find that wherever I go there is a kingdom of cows, which is now considered the best government in the world. I maintain that the dairy means to us better farming and better citizenship. This cow to-day is about our only money maker. I might also say that the cow will have to support the farmer and see him through till spring, and possibly until we get a new administration. (Laughter). And so to-day I find that the cow is the animal most talked about. In regard to this dairying business, the first great essential is the breeding of cows, because the dairyman to-day to a large extent, is a manufacturer, and the more he can cheapen his products by using cheaper material from which to make them, the better the result will be. Then, dairying means as well, better cow machines, better housing and better care all through. Then, next comes economical feeding of the cow, which brings me immediately to consider the question of the corn crop. I fully agree with Gov. Hoard that the "time has come when a man can no longer afford to feed his cows hay and burn green wood." (Laughter). To-day the profitable keeping of cows, next to their producing power, turns upon the question of the ration they consume, and it is to this that we must turn our main attention and see if we cannot in some way raise more of the essential elements of food, and in some form, just as acceptable to the cow, and as easily digestible. The great essential is to get the main bulk of the food of the carbonaceous kinds, five pounds of this, to one of the proteins, speaking in a general way, and so looking over the lists of food grown upon the farm to find the starch plants, it comes at once to two great supplies, hay, and the corn plant. In one sense it does not matter to the cow about the source of this starch, but it does to the man—in cost of production. The cow would be as content with asparagus shoots at $100 a ton, as with corn fodder at 60 cents, for the same amount of digestible food, but the man who fed the cow on asparagus shoots would soon be bankrupt, and be compelled to fall back upon the tender mercies of his father-in-law for a living. (Laughter). The great demand of the animal is for fuel, and it is carbon that is needed, and a fuel that will be as nearly consumed as possible. Coal that cost $4 a ton and had 600 lb. of clinker and ash left would be called expensive fuel, as compared with another ton that only had 150 lb. of refuse; but if the latter could be had for $2 per ton, the economy of manufacture would be correspondingly reduced. So with hay and corn fodder, ears included. The hay from an acre makes a certain amount of dry food matter of which a little more that 60 per cent. is digestible, and the field of good corn gives us 4,000 lb. of digestible matter, more than twice as much as the hay, and 17 per cent. more digestible; and then we have the story of the two coals told over in the food that we are feeding to the cows, and its bearing upon the cost of making butter and cheese. Then the only other question is the cost of raising and feeding the acre of hay and the acre of corn. While timothy hay may be all right for the speedy horse, when it comes to milk production, we have not found any plant that compares with the corn, either as a green food, dry fodder—if made presentable—or as silage, the latter being now the dairyman's sheet anchor in winter dairying.

We are talking a great deal about balanced rations nowadays, and there is a good deal of mist hanging about some of us regarding it, and so we appeal to the professors to help us, and they reply that a balanced ration consists of about five parts carbhydrates and one part protein, with its accompaniment of albuminous matter, nitrogen (free extract) and natural fats. Now we can feed our cow properly, can't we? (Laughter.) But rendered in English it means all the bright, whole corn fodder she will eat, and five pounds of mixed grain, oats, peas, bran, oil-meal, and like foods, including clover hay. The lesson is, that for every six or seven pounds of food, five of them can be of the great corn crop,—one that gives us the most food per acre, and the most easily digested. We, on the North American continent, are only just beginning to realize the possibilities of the corn plant; and to realize it to the fullest, we must not only understand it, and understand that the best half of the feeding value is in the stalk, and even more digestible than its grain, and that it is in developing the largest and best growth of stalk and ear, and securing it at just the right time, that is to constitute the best work in corn growing.

It needs no argument to prove that to do a thing well, and get the most out of it, one ought to know thoroughly well the matter he has to deal with, and the principles involved. And so in growing a field of corn one must know that corn is a native of the tropics, loves heat, moisture, decaying vegetable matter for food, and that the larger part of its food value comes, not from the soil, but a gift from the air and sunshine, so that the best corn is grown on rich soil, because the decay of the vegetable matter gives it the best of food, the ferment of the sod gives a warmer soil by some 8°, and if we only cultivate this soil an inch deep the weeds will be the better killed, the soil dried out less, the corn roots are not disturbed, and growth is not interrupted, and in every way this comes nearer the tropical plan of nature in the life history of the corn plant, and gives us the best growth of any plan that can be found. Corn planted on shallow plowed sod, roots left undisturbed, the weeds killed by shallow cultivation, grown in drills instead of hills, will grow to have a large feeding value even up to the very north part of Maine,—even farther north than Quebec, as I have seen.

Some very curious experiments are going on in Ohio in regard to this matter of culture, and for the last five years they have found that if the ground was made mellow and fine, and if the weeds can be prevented from growing, and the ground from crusting, by using some fine mulch, even gunny sacks spread over the ground between the rows and up to the hills, that there is no gain made in growth or earing by culture; and all that we cultivate for is to kill weeds and prevent crusting of the soil, and in this we may find much economy of labor, for as it is, the most that we do is to cut off roots and dig up a fresh crop of weed seed, to set out a new crop to have the fun of again killing them or the corn. If we plant our corn about two inches deep, and in fine, light soil, we can do the most of the cultivation with harrows before the corn is very high, and then the most to do is to check soil evaporation, for it is known, now, that 10,000 corn plants on an acre require not less than 300 tons of water to supply the plants, beside that evaporated out of the exposed soil; and so it is that the weeds in corn are robbers of the water needed by the corn, rather than stealers of fertility.

One of the important things to do is to select the kind of corn that will best grow and mature in your locality; and, if you can develop the ear, then grow large corn—especially for the silo. It is now known, that if corn will grow an ear that will glaze before the frosts, you have the best kinds for the silo, as the cutting into the pits makes the fodder and ears presentable to the cattle, and all is consumed without waste. In Ohio the large white Virginia corn is used for the silo, from the fact that it grows large, has a great deal of grain, and is rich in sugar, which is a great advantage in getting the best silage, as the more sugar the better it keeps in the pits, the least waste, and it is more eagerly consumed by the stock.

If we take the Pennsylvania experiments, we find that an acre of corn gave them 8,712 lb. of dry matter, available for food to the acre, or substance equal to the feeding of two animals eight months each.

If we can grow protein in the form of peas, oats, and the like, together with bran, oil meal, and such strongly protein substances to the amount of one sixth, we have our great cheap ration, and the silo solves the question of securing this crop at least expense and with the least loss. If it is the desirable winter store of combined food and succulence, which I believe it is, then we have the question of food and feeding stuffs brought down to a very comprehensible point, and I am as sure that the farmers of Canada can, with some care and forethought, adapt this great corn plant with its wealth of starchy material—so nearly in its nature a chief food for the dairy cow—to their needs, and produce it cheaper, and harvest with less labor, than any other crop, and thus bring to the dairy a new reserve force that will give the great dairy industry a new impetus. If you will try this crop with some of the newer ideas of cultivation, that have been outlined, I think that you will come back here next year and say "that acre of corn was the most profitable crop I ever raised."

The question of the silo needs a separate consideration, and I can close with no more sincere request than that you become manufacturers on your own farms, and out of these great cheap raw materials, grown on the farm, with a good dairy machine in the form of a fine cow, turn this material into fine butter and cheese, and the wastes into healthy pork, and you will realize, as never before, the possibilities of our farms, the results of active and studious brains directed to progressive effort. (Applause.)

THE CORN QUESTION.

Mr. Frank T. Shutt, M.A., Chief Chemist of the Dominion Experimental Farms, was next introduced, and on rising was greeted with applause. He said: I do not know that I can add very much to what Mr. Gould has said on this corn question, but you will remember that he pointed out in his opening remarks that it was the duty of the chemist to ascertain the nature of the food required by animals. Well, as chemist of the Experimental Farms, it falls within my province to find, out by analysis and experiment, the composition and the nutritive values of cattle foods as grown and used in Canada. Such may be said to comprise one branch—and a very important branch to dairymen—of my work.

With respect to our investigation into the constituents of the corn plant, I shall give you an outline or a series of experiments conducted at the Central Experimental Farm and carried on with a view of ascertaining the food value of certain varieties of corn at various stages of growth. These experiments were carried on in the field and in the laboratory.

I must however, first say a word or two to emphasize the importance of the corn crop, as a coarse fodder. It stands by itself, in producing, at the least cost, the largest amount of cattle food per acre. By the term "coarse fodders" I mean roots and hay and bulky food in contradistinction to bran, meals and concentrated foods, which are rich in nitrogenous constituents.

Our experiments were instituted to show (1) the best varieties to grow and (2) the right period in their growth at which they should be cut for the silo. And, perhaps, I may be pardoned, if I, at this stage, make another digression—for I am only giving now a few thoughts that occur to me while speaking—and tell you why scientific men and practical dairy men alike are in favor of the silo. The reason is that by its means we may preserve the corn in a succulent, palatable and digestible condition. By drying the fodder out in the field we very largely impair its digestibility. Further, we know as a matter of experience that a succulent food is conducive to keeping up the milk flow. We experimented with several varieties, and found as a result that the variety to grow was the one that would come to the glazing condition in the locality for which the information was sought. I may say that with us at Ottawa the varieties known as Longfellow, Pearce's Prolific and Compton's Early are among the best We found that those corns would come to the glazing condition before there was danger of frost. Why do we want to leave the corn till it comes to this glazing condition before we cut it? Our experiments at Ottawa have answered this question.

These experiments were carried on for several years and with many varieties of corn. We cut one tenth of an acre of each when the tassel first appeared, and analyzed it. From the analysis and from the weight of corn produced we calculated the amount of plant food in an acre of each corn at that stage of growth. Then we did the same thing with a tenth of an acre of each variety when they were in the silking stage. Later on we did the same thing when the ear on the corn was in the early and late milk stages, and finally, for the fifth time, we analyzed them and weighed them when they were in the glazing condition. At all these stages of growth we calculated the amount of plant food to the acre, and between the first and last periods we found there was a difference of 100 per cent. That means that the farmer who cuts his corn when at the tasselling stage will lose one-half the value of his crop. There is a constant increase in real cattle food until the corn comes to the glazing condition. Therefore, you see, you have scientific testimony of the economy, the necessity for letting the corn grow until it gets to that stage when the ear is glazed. This is a very important matter. The corn in those earlier stages contains a very much larger percentage of water than later on, and water is not a commodity which at present, in Canada, has any commercial value.

There is one other point I might emphasize—that is, as to the necessity for room for the stalks and roots. We know that the plant takes its food from two sources, from the atmosphere and from the soil. A consideration of this fact shows the folly in the practice that is prevalent throughout the country, viz., of sowing corn broadcast. Those who do this lose from 50 to 100 per cent. of their crop. Corn cannot come to its proper stage of maturity, it cannot ear out if sown broadcast. Now, I do not know how it is in this part of Ontario, but I am sorry to say that in many parts of the province the system of sowing corn broadcast is still prevalent.

Another point. Do not labor under the impression that it is not necessary to manure your land for corn. I believe it pays to thoroughly manure the soil for this crop. It is a luxurious living plant. It comes from a tropical climate, where it lives and thrives on beds of decayed vegetation in the soil. It would pay you better as dairymen to manure well for the corn crop than for many of the other crops of the farm. Corn is a rank feeder, but nevertheless there need not eventually be any loss, because it stores up those elements in its tissues and you can use them over again in the manure from the cow. It is not a plant which will steal away fertility from your soil, providing you properly preserve and replace the manure. You are not disposing of so very much of your fertility in producing milk. In feeding the corn on the farm you return 75 per cent. of its fertilizing value to the soil in the manure from the animals so fed. You will surely be well repaid by liberally manuring the soil for the corn crop.

I have only said these few words to emphasize the value of Indian corn, a crop which we consider has entirely solved the question of economical and profitable winter dairying.

Mr. Philips: In this discussion there has not been a word about the amount of corn to feed.

Mr. Gould: Have your corn in drills 3½ feet apart and one kernel to every 12 inches in the drill, for ensilage. You can nearly always tell the feeding value of your corn. When in the tassel it will be represented by 14, when in cob by 28, and when it begins to tint by 42. When it is at the stage represented by 14 you have to feed three times as much as when the corn is matured. That is why your cattle are so everlastingly hungry after you feed green corn. If your animal eats 42 lb. of solids then she must have three times 42 lb. when the corn is in the first stage, because the bulk of the plant is made up of water, and she cannot carry that amount around with her.

Mr. Rowland: You gave us to believe that after the corn was above ground the cultivating should entirely cease.

Mr. Gould: Keep the upper inch of ground moving for three weeks, whether you see weeds or not, and the finer the machine is with which you cultivate, the better. We have a little machine in Ohio, made up of three sections in the form of a triangle. We get cut nails and drive two rows of these around that triangle. It will take about two hours to make this, and it costs about 60 cents.

Mr. Rowland: Suppose there were any stones in your field they would destroy your machine. But if you cultivate after the corn is up, would the destruction of your corn not be greater than anything you would gain by destroying the weeds?

Mr. Gould: Do not let these teeth go below the top inch of soil.

Mr. Rowland: How does Virginia corn compare with Red Cob corn?

Mr. Gould: I do not want to tell you what to grow. Raise the largest variety that will come to maturity here. An immature corn has not got the sugar which is desirable. One of the things we are after is sugar. If you have one corn that has more sugar than another, that is the more valuable; but do not jump to the conclusion that sweet corn has always the most sugar. As a matter of fact, sweet corn is the most destitute of sugar. We prefer sugar to starch, but over here I suppose you will have to take more starch than sugar.

Mr. ROWLAND: I find on the surface my ensilage has a sourness.

Mr. GOULD: All ensilage has an odor, caused by the formation of hydrochloric acid. Do not get scared about that, because after the cow has eaten your ensilage she has to add to it about twelve times more hydrochloric acid before she can digest it.

Mr. GRAHAM: What effect has frost on corn?

Mr. GOULD: I do not think it has any. The effect of frost on the leaves at any rate will not hurt the corn so much as cutting it before it is ready for cutting. If there is just now and then a leaf in the field that has been touched by frost, let your corn stand and take chances of another frost. You never saw any of the stalks frozen by the first frost. It is only the leaves that are touched, and the feeding value is mainly in the stalk. As 175 is to 4,000, so is the effect of the frost on a field of corn.

Mr. ROWLAND: Prof. Robertson has led us to believe that there is a great deal of value in the leaves.

Mr. GOULD: There is a value amounting to 175 as compared with 4,000.

Mr. GRAHAM: Is there not just as much value in a pound of the leaves as in a pound of the stalks?

Mr. GOULD: No, and there is more value in the stalk below the leaves than above. There is 900 lb. of food in the stalk below the leaves for 600 above.

Mr. GRAHAM: Why is it, then, that the cow eats the leaf first?

Mr. GOULD: Why do you chew gum in preference to this picture frame, for instance Because it is easier to masticate. It is a matter of the cow's taste and of her jaw power. The food in the stalk below the leaf is worth one-third more than that above it.

Mr. MCINTYRE: Will leaves which have been dried up by the frost spoil your ensilage?

Mr. GOULD: No, we found three years ago when we cut corn on the 24th, 25th and 26th September that there was not a leaf but was hanging down. As we put it in the silo we added about 8 gallons of water to the ton of corn, and we never took out better ensilage. I had lost my leaves but not my food value, but I had to feed 5 lb. more ensilage a day.

Mr. ROWLAND: How long does it take corn to mature?

Mr. GOULD: 120 days from the time of planting. This year it matured in 100 days.

Mr. ROWLAND: Would you recommend an earlier or later corn than the Southern Sweet?

Mr. GOULD: I could not tell without seeing it as it grows here; it requires a little longer to mature than the Red Cob or Missouri. I like reciprocity, but I believe you have a better corn here for Canada than we have.

Mr. ROWLAND: Mr. Shutt mentioned two kinds of corn that they had found successful at Ottawa. I wanted to ask him what length of time it took these to mature for the silo, and the character of the soil.

Mr. SHUTT: I cannot from memory give you the number of days. Among others we experimented with Red Cob, Pearce's Prolific, Longfellow, Mammoth Sweet and Thoroughbred White Flint. The Red Cob corn did not ear out before the frost came, and the same is true, in most seasons, with regard to the Thoroughbred White Flint. Speaking from memory, the impression on my mind is that the two first varieties I mentioned gave us the best results, although the others were larger varieties.

Mr. GOULD: Pearce's Prolific will mature in about 90 days and Longfellow in about 100 days. Some of the others are nearly about as early as these, and I think it would be would be well for you to try them. They grow more on an average, per acre, than those that Mr. Shutt has mentioned. For instance, the Canadian dent and the Leeming. There is no better than the latter, and it would be well to try these in this northern district.

The convention then adjourned until the evening.

FIRST DAY—EVENING SESSION.

The day's proceedings of the convention closed this evening with a programme in which amusement was sandwiched with instruction. The first-mentioned feature of the session was in charge of a local committee, and well they performed their functions. The stage was very tastefully festooned, carpeted and otherwise ornamented with pictures and flowers. Music was contributed by local talent, and the applause which greeted the efforts attested the appreciation of an audience which filled the Town Hall to the doors.

ADDRESS OF WELCOME.

Mr. J. H. Elliott, Reeve of Chesley, occupied the chair, and, in opening the meeting, said: I am glad tonight to welcome in our midst the Creameries' Association of Ontario, and I am sure they, in turn, will appreciate the audience which is here to greet them. I think that farming is the best business under the sun, and after my experience of life if I had to live over again I believe I would be a farmer. (Hear, hear.) The industry which these men represent is yet in its infancy, but, along with cheese, it is one of the best industries we have in Ontario today. I think it is a great privilege to the people of this section to hear the discussions which are taking place at this convention, and I am proud of Chesley—more so than I ever was before—to think that we afford sufficient attractions to bring this Association into our midst to discuss this great question. The men who are identified with this Association are doing a patriotic work. They do not want to hurt the interests of their allies in the dairying business—those engaged in the pioneer industry of cheese-making—but are only desirous to supplement it by an industry from which we will all realize the benefit. Without saying more I will now read an address of welcome to this Association

To the President, officers and members of the Ontario Creameries' Association:

Gentlemen,—On behalf of the municipal council and the citizens of Chesley we desire to extend to you a cordial welcome to our town and the county of Bruce. We are the more gratified at your presence because we are aware that most of you have come long distances to attend this Convention, and because you will have an opportunity to see for yourselves a section of our county which is particularly well suited to the successful prosecution of the great industry in which you are so much interested. We are glad to testify to the fact that the farmers of this section of Ontario fully appreciate the efforts you are making to effect improvements so much needed in the manufacture of butter, and we would express the hope that the day is not far distant when the butter of Ontario will take the same high position as Canadian cheese now does in the markets of the world. We recognize the fact that if Ontario is to excel, or to hold her own, in farm products, in competing with other agricultural nations of the world, it must be done by producing the best in every line, and we are glad and proud to welcome to our town an Association organized to accomplish this result in such an important branch of dairying. We assure you that you can be engaged in no more noble or patriotic work for the benefit of our common country, and we are glad that our Provincial Legislature has recognized the importance of your mission by granting you substantial assistance for the promotion of your ends. We hope your stay in our town may be both pleasant and profitable, and may in a large measure promote the objects you have in view. Again we give you a right hearty welcome to Chesley.

Signed on behalf of the village of Chesley.

J. H. Elliott, Reeve.

The President, when the applause which greeted the address had subsided, replied as follows: On behalf of the Ontario Creameries' Association I accept the kind welcome that has been so cordially extended by the Reeve of this village. Of course the village of

Chesley was a place that we never heard of until your good fellow-townsman, Mr. William Halliday—the gentleman who so well represents your district on the Board of Directors—told us in convention assembled that Chesley was the most live and enterprising town in this whole northern country. And, sir, in consequence of his nice way of putting his representations before us, we are here to-night for our annual convention; and I am delighted that we accepted the invitation from your director, and that we did come to Chesley, and that we have been so warmly welcomed by your people. I assure you that we have a staff of speakers for this meeting who will interest and instruct us all. Among them are Professor Robertson and Mr. Shutt, of the Dominion Experimental Farms; Professor Dean, of the Agricultural College; and Mr. John Gould, of Ohio, who feeds his cows to make money. He does not feed them just because it is a pleasure to himself, but because they have made for him a beautiful home and placed him in the first position by reason of his kind and careful treatment of them. Mr. Alex. E. Wark will now address you on a scheme to get butter on the market in full bloom. We make to-day as fine butter as is made anywhere in the world. I do not want any one in Ontario to make any mistake about that. What we want is to force the recognition of that fact on the people here, and to bring all our butter up to the best standard in order that we may not only appreciate its excellent quality at home but let people abroad know that we make the finest butter to be obtained anywhere.

MARKETING BUTTER IN "FULL BLOOM."

Mr. Alex. E. Wark, Paisley, addressed the Convention as follows: Any person who has given any time to studying the condition of our butter industry cannot help but come to the conclusion that so far as gaining a reputation on the English market is concerned it has been a dead letter, at least as far as gaining a good reputation is involved. People who ought to know, tell us that there is no country in the world better adapted for dairying than Ontario, and I feel like adding to this that there is no country can show a better class of people than can Ontario. Now, assuming that these two statements are correct, how is it that we cannot show up better in the butter business? Every disease has its symptoms, cause and remedy. You are already too well aware of the symptoms of the disease which has hold of our butter industry, so I will waste no time in reference to that. You will be more interested in the cause and remedy.

First the cause. In this there are three distinct parties interested, viz.: The creamery patrons, the factorymen, and last, but not least, the buyers and exporters. Now let us see wherein each of these parties is to blame for the present state of affairs.

As to the patrons, during the past ten years I have been brought in pretty close contact with creamery patrons, and I must say that by far the greater number are exceedingly careless in the way of handling their milk and cream. More especially do I find this to be the case in cream-gathering factories. Instead of striving to furnish the factory with a first-class article, they seemingly study more how to get the cream drawer to take the cream off their hands with as little exertion in caring for it as is possible. We have three classes of patrons: Those who know how to care for their cream and milk and do so. May the Lord prosper this class. Then, again, we have those who know how and won't do it; and those who seemingly don't know how, and, of course, don't do it. These last two classes are the people who give butter makers trouble. Their cream is sour, hot and tainted, and, of course, spoils all the good cream. Consequently the good patrons have to suffer the evil results arising therefrom. Now, this is one of the causes why bad butter is made in some of our creameries. If I can get cream delivered at the factory perfectly sweet I will undertake to make an article which would bring at least 2c. per pound more than if it was sour, hot and tainted. What does this mean? Simply that the patrons realize 2c. per lb. more in the one case than in the other. This of itself ought to be sufficient inducement for the most careless to change their methods. Factorymen will have to put more energy into their business during the winter months. Spend plenty of time among your patrons, explaining the best methods of handling milk and cream and showing the advantages from a dollar and cent standpoint of practising these methods. I have also found it a good plan to hold a public meeting in the interests of the creamery, and have one or two speakers present—men who are successful dairymen preferred. This method is about the only successful one I know of.

The next individual we will enquire into is the factoryman. His lot has been a hard one, and although his sins have been comparatively few in number, yet he has had one bad one, viz., that of holding his butter for a higher price. As a general rule he is the loser in the end. At least he should be. He seems to lose sight of the fact that butter is perishable goods. His butter loses in flavor and also in weight. Everything goes against him getting the top price, if quality is considered anything, and I know if it has had anything to do with it in the past it certainly will from now to the end. England has declared war on all butter that is not fresh, and if she can't get it fresh she don't want it at all (and who would blame her?); so that holding butter till it gets old simply means that we are closing the doors to our own market. In connection with this butter storing business our exporters are equally to blame. But I need not refer to this. I will only say, is it any wonder our Canadian creamery butter has a notorious name in England? The great wonder to me is that we get as much for it as we do. We must remember that times have changed in England. She is no longer depending on us for butter. Denmark and Australia are supplying her with fresh creamery butter, and she plainly told us last season that if we will not send our butter fresh and nice we will have to eat it ourselves. No doubt most of you are acquainted with a little country not half as big as Ontario called Denmark. The strides she has made in dairying are simply marvellous. In 1893 she exported 105,000,000 pounds of butter, while the whole of Canada's butter exports were only about 7,000,000 pounds. The question naturally enough arises, why this great difference? It is answered simply enough. The Danes have adopted the creamery system throughout the length and breadth of the land, and are placing their butter on the English market fresh, while we are doing the opposite. I am convinced beyond a doubt that the creamery system is the one and only one for Ontario. A great many farmers have mistaken the teachings of the travelling dairy, and have run off with the idea that they advocated the home dairy plan. If a travelling dairy such as we have at present had gone through this province thirty years ago and advocated an improved home dairy system it would have been quite in keeping with the times, but they are advocating no such system at present. If this system were practised it would only be a very little while till butter would be such a drug on the market that we would be hardly able to give it away, as it would all have to be placed on the home market. The home market we will always have with us; the English market we will have to fight for. We are told by English buyers that occasionally they get hold of some choice Canadian creamery butter, and they also tell us it is as good as the best that is made in the world. Surely this ought to be encouragement enough. I cannot see why we should not do a big trade with England in butter, providing we go the right way about it. I have already pointed out the necessity for patrons and factorymen to join hands in endeavoring to produce a No. 1 article. This part of the business lies entirely with them, and more especially with the patrons, for no matter how good the butter-maker, or how improved the machinery in the factory, if he has not the latest improved milk and cream it will be absolutely impossible for him to produce choice creamery butter.

But what advantage is there in going to much trouble in making good butter and then letting it spoil after it is made? We must see that it is placed in the hands of the consumers at once, or we will continue to remain just where we are. The present system of marketing butter is a scandalous one, and one which we must discard at once without any "ifs" and "ands" about it, if we want to do business with England. On these grounds I have prepared a scheme for the consideration of Ontario creamerymen, and it is for you to say whether it is practicable or impracticable, wise or unwise. In the first place our butter should not lie in the factory more than two weeks before it is started on the road to market; in the second place it should be placed in cold storage as soon as possible after leaving the factory; and in the third place, after it once gets on the road we want it to "get there," as the saying is. Seeing the impracticableness of running refrigerator cars on all our branch lines of railway wherever factories are situated on account of great expense, I would suggest a plan as follows: That one or two refrigerator cars, as necessity demands, be run by the G. T. R. from Sarnia Tunnel ice house to Montreal, every two weeks, commencing about the middle of May and ending about the end of September, which would mean ten trips. These cars to be kept iced, and have regular stopping places, such places to be decided on by the Ontario Creameries' Association after due consideration; if necessary the date and hour of leaving such stopping places to appear in the official time-table of the company. On the sides of those cars to be painted in large brilliant letters, "Ontario Creamery Butter." Let me illustrate my plan of working. There is a creamery here in Chesley, also one in Paisley. Now, these two factories must agree to sell every two weeks. The Ontario Creamery Association car is timed for Guelph a certain day, and it only requires a little forethought to have your butter reach Guelph on that day, where it will be at once placed in cold storage. The hardest point in the whole thing to settle is who is to buy the butter. I have thought this over a good deal, and have concluded that the best way is to give them all a chance, with the distinct understanding that they must buy subject to shipment every two weeks, *viâ* cold storage in the Creamery Association's car. If these men don't do a square business with us this year we will take steps another year to do without them. I expect nothing else but that some one will want to hold his butter for a higher price. To such I would just say, surely you have seen the folly of this already, and, viewing this from a commonsense standpoint, does it stand to reason that a man is more apt to get a larger price for an inferior article? I care not how good your butter or how good your storage may be, butter deteriorates in quality with age; but no matter whether you believe this or not Englishmen do, and they have distinctly told us "fresh butter or none at all." Our Ontario Government has always come to our assistance in time of need so far, when we could show them that we were really in need. They cannot help knowing that we are in need now, and I think our request for enough money to pay the expenses of the refrigerator cars would be a very modest one, compared with the one made by the Dairy Association of Quebec for an annual grant of $220,000 to subsidize a line of steamers which would carry refrigerators for the shipment of butter, cheese, bacon and hams, and the Association there is hopeful of getting this. I am of the opinion that two cars would be enough, and a man to look after them could be got for $50 a month and expenses. I am satisfied we will have no trouble in getting this sum, if we go the right way about it. One thing is sure: A change has to be made or we may as well go out of the business. Which are we going to do? (Applause.)

The PRESIDENT: I for one have been perfectly delighted with this paper, and I may say here that the Grand Trunk Railway Company has already offered the facilities for shipping in refrigerator cars every two weeks if we would only guarantee to send our butter right along and not hold it. If you are ready to sell your butter regularly the Canadian Pacific Railway Company, as well as the Grand Trunk, is ready to send a car right down through the province every week, or two weeks, as we may arrange, and we may then get it into refrigerators on the steamships, and have it reach the old country in "full bloom." There is always a fear that the buyers will hold for a higher price, but if you sell cheaply the first time the quality of your fresh butter will soon command the price it deserves, for there is always competition in the purchase of anything that is worth buying. It is true that the buyers in Montreal, with the Board of Trade behind them, have gone down and asked for an enormous subsidy from the Provincial Legislature in order to get their butter on the old country market fresh. We do not want our Government to give one five cents in that direction. What we want to do is to take hold and exert ourselves, and with our own force put it right on the market; and we will have have no difficulty in getting the price if we will ship it in first-class condition regularly. (Applause.)

A CLERGYMAN'S DAIRYING EXPERIENCE AND ADVICE.

Rev. Mr. **Philmore**, of Chesley, was invited to address the convention. He said: I can talk better on the fine points of Calvinism and the character of baptism better than on a subject such as you are met to discuss, but I have nevertheless been interested in dairying all my life. A witness was once asked by a lawyer, "What is your occupation, sir?" and the reply was, "I am a farmer." "Have you worked on the farm long?" "All my life." "What did you do the first year?" "I milked, sir." (Laughter.) So I can say I have been interested in the same direction that far myself. I am told that one of the earliest expressions I ever made use of was with reference to the cow. I can say further that the earliest recollection I have is of the red rooster and the red cow, and can remember these since I was three years old. I was born in September, and not being overly precocious I did not talk the following winter. (Laughter.) The next winter, however, I am told I got up one morning and saw the first snow I had ever seen. At once I called, "Mamma, there's lots of salt on the ground now; there won't be need for salting the cows any more." (Laughter.) When I grew to be a boy of thirteen I left the village and hired among the farmers. The first thing I was put at was milking, and by the aid of the hired girl learned how to perform that little operation. So, you see, I am not. after all, an ignoramus appearing before you to-night on the subject of dairying. I know something, too, in the matter of selecting butter. When first married I undertook to select some butter, and when it came home my wife said: "If you cannot do better than that you had better not buy any more." (Laughter.) So I have learned that I must put my olfactory nerves to work in order to buy nothing but the best.

To speak more seriously, I am glad that we have the Ontario Creameries' Association holding its convention in Chesley, and giving us the best instruction with regard to butter-making, and I believe those present who are engaged in agricultural pursuits will find themselves greatly benefited by these discussions. In going up and down through the country I have heard a great deal of talk among merchants about the character of butter made by farmers' wives. I remember one merchant who came to a town where I lived who did not take all the butter offered to him at the same price. He did business not because he had to, but because he liked to; but he was a very blunt sort of a fellow, and when he came into that community some of the farmers' wives were horrified, and some of them stamped and raged, and some of them who were not very particular were almost swearing, because he would not give the same price for inferior as for good butter. He would say to a customer: "Madam, your butter is not first-class. I know where I can put every pound of butter I buy, and if you will bring me a first-class article I will put it in a first-class market and give you a first-class price." Of course it was mortifying to a woman to be told that her butter was not so good as her neighbor's, but the consequence was that butter-making was just about revolutionized in that section of country. I believe we have here in Ontario as good an opportunity of making first-class butter as any section of country in all the world, and if proper attention is paid it will be made first-class in this country, and in this particular section. I am myself very much in favor of the creamery system, and I believe the farmers themselves, if they adopted it, would find out in a very short time that they would realize as much for the cream as they are getting for the butter, and would try to sell it in that way.

I do not know that I should take up more of your time. We have men here who have come from a distance, and have this matter more thoroughly worked out than I have, so I will just make way for them and thank you for your hearing. (Applause.)

THE AGRICULTURE OF THE FUTURE.

Mr. **Shutt** was again introduced and said: You would infer from the words of the President that I was about to give an address of a technical nature, but such is not my purpose to-night. If I have the pleasure of meeting you to-morrow morning, as I trust I may, I shall enter into some scientific details, showing you the relation between chemistry and agriculture, and further, pointing out the benefits to be derived from a knowledge of the chemistry which underlies our farming operations. I shall then illustrate and emphasize the advantage it will be to apply that knowledge to our work.

This evening, however, I purpose giving a short address on "The Agriculture of the Future."

We are a busy people, living in a busy age, or if we are not all busily employed we ought to be. At the same time we must not lose sight of the old proverb, "All work and no play makes Jack a dull boy." I think there is room for more recreation in the country, and an easier time, generally, than we have had in the past. I think it would be a very useful thing for both bodies and minds if we had more real recreation. What I meant by saying that we ought to be busily employed is that perhaps there might be a little less loafing and idle talking at the corner store or the tavern, which do not tend to put money in our pockets, improve our minds or develop our bodies. But I must not allow myself to digress from the matter in hand.

It would help us if occasionally we were to make a retrospect, to look backwards, comparing, as far as possible, in matters pertaining to farming our present position with that of our forefathers. Such a thoughtful retrospect will show us wherein matters have improved. If we are alive to our own interests, we shall take advantage of such improvements as may be revealed by this retrospect. We shall be thus in a better position for our future work. We shall be able to do more intelligent work. Again, we can learn in this way where mistakes have been made; and, I may add, it is just as useful for us to know our mistakes as our successes. Thus we are enabled to correct and avoid in the future our disastrous mistakes.

The results of our work, from a practical standpoint, depend not only upon the application of our own experience, but also that of others. That, I presume, is one reason why we hold these annual meetings. They are really provided as a means for the interchange of thought and experience. For this reason I should like to see disappear at these conventions that line of demarcation between the audience and the platform which now exists. At the evening meetings, I am aware, the programme must be arranged as a "platform programme," but the greatest good at ordinary sessions will arise when we make the subject under debate a matter of general discussion.

When we make this retrospect in agricultural matters, we shall see that in late years the methods of farming have almost entirely changed. Let me mention but a few of the changes of the last 25 years. The introduction of improved farm implements has, I may say, worked a revolution. There are the reaper and mower that have entirely replaced the old sickle, scythe and cradle. There is the self-binder and a thousand implements and machines our fathers knew nothing about, which have made work easier for us. I suppose in these last years of the 19th century we consider ourselves considerably wiser than those who have gone before us, but if we are to benefit from the knowledge of improvements which is at present obtainable, we must practically apply such knowledge. First, let us learn all there is to know about our business, and then apply what we have learned. Consider the vast strides made in other professions—in electricity, in medicine, in all the arts and sciences. It has been just the same in agriculture.

Our farmers have not been slow to avail themselves of the improved mechanical contrivances in connection with their work. I am in a position to know that there is a great and widely spread desire among our agriculturists to learn more of the work with which they have to do. That is, of course, very encouraging to us who are carrying on the Governmental experimental work in connection with agriculture. It is a very hopeful sign for the future. We find now that there is a disposition to use the head as well as the hands; without such a combination there cannot, I believe, be profitable farming in the future.

Farming as an art is the oldest of all occupations; but farming as a science is the very youngest of all. By science of farming I mean that which shows the how and why and wherefore of all that takes place on the farm, and points out the underlying principles of plant and animal growth. That is science applied to agriculture. I believe it will be essential to economical and profitable farming in the future that our farmers should be in possession of elementary knowledge of those sciences which bear on agriculture. I refer to chemistry, physiology and botany. You may say, how is all this? Have we not got along without a knowledge of there things in the past? Our fathers were not in possession of this knowledge, and we do not see what necessity there is for it in our case. I would like you to stop and consider this matter for a moment. There is scarcely an operation on the farm which does not involve a change of matter—from mineral to vegetable, from vegetable to animal. Now, what has the science of chemistry to do with the change of matter? Is it not chemistry that tell us the constituents taken from the soil by growing certain crops, and what we must return to the soil in the way of fertility if in the future we are to obtain lucrative crops? Is it not chemistry that tells why wheat, straw and bran have different feeding values? Is it not chemistry that tells us the quality of milk, and its value for cheese and butter-making? Is it not chemistry that tells us why it is better to grow clover than timothy? Chemistry has ascertained that some plants can assimilate certain food elements from the atmosphere, and that others have not this faculty. I refer to the absorption of nitrogen from the air by the legumes—clover, peas, vetches, lupines, etc.—a fact that is revolutionizing agriculture in some parts of the world. Chemistry alone can tell us when we are using impure well water and thus endangering our health, and that of our cattle. Those are a few illustrations, very briefly put, of the application of the science of chemistry to agriculture. I say we cannot afford to neglect the teachings of chemistry if we wish as farmers to be in the front rank of our profession; and, I might add, I believe we are an ambitious people and that it is the aim of every young and rising farmer to put himself in the front rank. There is no longer the sneer and the deprecatory remarks there used to be with reference to scientific farming.

But a few moments ago I propounded the question, "If our fathers got along without the use or aid of science, without any knowledge of chemistry, why cannot we?" Let me ask, had our forefathers hospitals, telegraphs, fast steamships? Could we do without them now? The times change and we change with them, and, mind you, if as agriculturists we do not keep pace with the times we shall be left behind in the race. It is just as true that the hindermost goes to the wall in this pursuit of farming as in any other calling. You know that to-day the times have changed and are yearly changing in agriculture. We have no longer isolated markets. The whole world is in competition with us. It is the man who is willing to make the best article, and make it the most economically, who will command those markets and make the profit. Others will, even more than now, eke out an existence.

There is another reason why we should apply ourselves to the acquisition of knowledge such as I have been speaking about. We have been blessed in this country with an exceedingly fertile soil. I have analyzed many of the virgin soils of Canada, and can say that we have as fertile soils as are to be found in any country. But in many parts there has been a very foolish plan of farming pursued. Many have been selling off plant food in wheat and oats and barley, and not replacing it in the soil by any kind of fertilization. As a result of this there are many farms not worth 50 per cent. of what they were 25 years ago. These are not farms on which dairying has been carried on. No; on them grain exclusively has been grown, the farmer never realizing that with every load of wheat he sold, he disposed of so many dollar's worth of fertility. Now that we have come to realize what we were doing, I trust we shall remedy that state of affairs.

Let us understand what we are going to do, and why and how we are going to do it. When we appreciate the necessity for this course there is every probability that we shall succeed. It is apparent to all thoughtful people that agriculture is becoming more and more an exact science; that it has been put upon a more business-like basis. To-morrow I shall refer to the application of science and scientific methods to the purchase and sale of milk. It will be brought home to us what Dr. Babcock has done, as a scientific man, by the invention of his milk test. I have no hesitation in saying that the adoption of his method is going to put the purchase and sale of milk upon an equitable and business-like basis; and this because it shows exactly the value of the milk for the purposes to which it is to be put.

Let us, then, in the future, see that we give up this haphazard, this guesswork, this rule of thumb style of farming that has been in practice so long in the past. I feel sure that the days for that kind of farming have gone by, and we cannot believe that they will ever return. That would be retrogression. The world is progressing. Is there not progress and development in agriculture in other parts of the world?

It was only the other day that an English gentleman travelling in Germany, said to a farmer, "What do you put on your fields for mangels?" The farmer replied, "A fertilizer containing 40 lb. of nitrogen, 15 lb. of phosphoric acid and 30 lb. of potash per acre." Now these quantities may not be correct, but we see that the German farmer has studied his work. He takes a pride in mastering the difficulties that arise in his farm work; he has applied his head as well as his hands. He has learned what kind of food his plants require, and how he can most economically give it to them. He knows the amounts of the various food nutrients given to his cows, and what they give him in return. He manages his whole business on such a system that it is practically a system of bookkeeping. In fact, on many of the rented farms the tenant is required to put down just exactly what he has spent and what he has earned on the farm in the year, and according to his reckoning the rent is settled. I mention this, not that I should like to see that system of computation general here, (for I think we should all have our own homesteads), but I should like to know that we were adopting a system in our farming—a system that would put our work alike on a scientific and business-like basis. We should then know just where we were making profit and where we were losing. The German farmer knows in dollars and cents what represents the value of the plant food, which has beeen taken off his soil by his crops, and knows how much of certain fertilizers he must buy to restore that plant food. He will look upon his sale as his capital, and the crops as his annual interest. A man who puts his capital in a bank which pays no interest is not making much money; so it is with those whose crops are not worth the expense of harvesting. The farmer who does not put back the plant food he takes from his soil is using up his capital. The intelligent man will be the man who uses that plant food the most, and then in some form or other returns it to the soil. He will then convert his crops into milk and flesh and pork and other finished products by the aid of his animals. He will see that the resulting manure is carefully preserved and used to advantage upon his fields. It is often in this latter point alone that the difference between profit and loss lies. I wish to emphasize another fact. There is no profit in having a fertile soil if we do not use its fertility. By increasing the fertility of the soil, the farmer increases his capital, so that in bringing up the yield of our farms from 15 to 25 bushels per acre we are increasing our capital. It is the use of capital that brings the profit, the interest. For this reason do not be alarmed when you hear that a certain crop is an exhaustive one. If we will only see to it that the fields are thoroughly manured, it is the exhaustive crops, as a rule, that pay best, simply because they represent a high rate of interest. The motto is, then, use, but be sure to replace, the soil's fertility. Don't lower the capital account in the soil. Why is clover profitable both as a fodder and as a manuring crop? Because it has been proven that it is able to take from the air an element, nitrogen—a constituent necessary and valuable both for plants and animals. It stores this nitrogen in its tissues, and we can then use it as food for succeeding crops (green manure) or to produce flesh and milk. When our soils have become partially exhausted, we might with advantage supply potash and phosphoric acid by an application of unleached wood ashes, and add nitrogen by turning under a crop of green clover or peas.

I would like you to think that in the past there has been too much hand work and too little head work. See if the brain cannot lighten the labor of the hand. I am firmly of the belief that many of the best and most intelligent of the boys have left the farm because they thought that there was no scope for their abilities, their thinking powers, on the farm. As a result of the influx of farmers' sons into the cities, we know that to-day the professions are overcrowded. Certainly there has been a cause for the boys leaving the farm and crowding into the towns and cities. These young men have seen that farming as carried on about them was a system of civilized slavery. Farming has been drudgery. It is different now. Anybody who has aspirations or ambition who wishes to use the whole of himself, and he feels that the best part of the body is the brain, can easily find avenues for the acquisition of knowledge;—can find in the study of agriculture all the mental work he could desire. We are blessed with many opportunities to learn that our fathers did not enjoy. There are many and great opportunities now, and we should avail ourselves of them. Assistance of a most valuable kind is offered to both old and young by our Dominion and Provincial Governments. There is instruction in the school and college, there are lectures at the agricultural conventions and farmers' institutes and there are the reports and bulletins of the experimental farms. There is much valuable knowledge to be had for the asking. I am not belittling or ignoring the practical side of agriculture, but I say that the man who uses his brain will do better work with his hand. Strength is not everything, it needs brains to direct it. Take the case of a cheese-maker. You may have a big strong man without, as we say, any head, but can he do as good work, turn out as excellent a product, as a smaller man who has put his brains to work? I believe we shall have a much better condition of affairs in farming than we have at present when we have come to realize this truth. I want you to rid yourselves of the idea if you have it that there is nothing ennobling in agricultural work. There is a feeling among some of our people that farm work is degrading. It is an altogether mistaken notion. It is only when we come to realize the extent of the knowledge there is to acquire in order to carry on our work properly that we shall lose this foolish—this most erroneous—opinion. I mentioned a few moments ago an incident with reference to German farming. We find that there is in connection with their universities a course in agriculture, a course similar to that in classics, metaphysics or science, one in which the student may proceed to his degree. I trust the day is not far distant when we shall have the same course put on the curricula of our own universities. (Applause.) It afforded me last week, the greatest pleasure to be present on the occasion of the opening of the School of Agriculture and Mining in connection with Queen's University. I was glad to be there, because I shall look upon that as a red-letter day, as marking an important step in the development and progress of Canadian agriculture. I trust it will be an example that will be followed by other educational institutions. I should not forget to mention that a good work is being done at the Agricultural College at Guelph. That institution has now a third year course of study, at the close of which an examination is given and a degree in agriculture granted from Toronto University. We thus see that our highest educational institutions recognize that there is much of an ennobling character to learn in connection with agriculture—much that is well worthy of the closest study and the most careful investigation. I should further like to say that I believe in the future prosperity and progress of this country. Canada, is above all, I believe, an agricultural country, and in my opinion, it will in the future be more and more so. I am not at all forgetting that it has great mineral wealth—a noble store of wealth as yet comparatively undeveloped. I am aware that we take no mean stand in the matter of our manufacturing industries. I am aware that we have very large timber interests. But knowing all these facts, I say, that Canada is above all an agricultural country—it is a food-producing country. There is no reason why Canada should not supply cheese, butter, apples and other finished products of the farm to the large consuming countries of the world, such as England. There are great opportunities ahead of us if we only make use of them. When we consider the favorable climates of Canada; when we realize the sturdiness, the hardiness, the industry and the ability of our people; when we look at our vast and fertile domain; when we take all these things into consideration we must admit that we have an agricultural country and that we must as a people be an agricultural people.

I shall indeed be glad if you have received from the few words I have spoken an incentive to a deeper study of the many interesting problems that this work of agriculture is constantly presenting. I trust that what we learn here will be put into practice. There is but little use knowing how to do a thing unless we put that knowledge into practice. I am convinced that in the time to come we shall enjoy the greater profit—we shall be in receipt of a larger pecuniary benefit, if only we will apply our heads as well as our hands. But more than that, we shall then be better men and women, a happier and more prosperous nation. (Great applause.)

The PRESIDENT : I am sure you must be pleased with the learned address we have just heard. The benefit of such an address to us is in the putting of it into practice. If the advice is to be of any real or permanent value to us farmers and dairymen, let us this year be more eager to learn, to read and to experiment. We shall in this way find our work becoming ever more interesting and more profitable.

DAIRY MANAGEMENT.

The PRESIDENT, in calling upon Mr. Gould to address the convention on the above subject, said that before he got through he would perhaps show his hearers how to get along without mortgaging the farm.

Mr. GOULD was received with applause. He said : Since I came to Canada, a little more than a week ago, my experience has been one series of utter surprises. The first one I got was in the way of banquets. Then, I saw yesterday, a woman vote for the first time. I shall not tell my wife that. (Laughter.) Then I got a railway dinner for 35 cents, instead of 75 cents, which is the customary charge for a luxury of that kind in the United States. Finally, I came up here to Chesley and was "run in" by your Reeve (laughter) before 4 o'clock in the afternoon. (Renewed laughter.) To-night I heard the 9 p.m. curfew ring, and now I meet this warm reception. I might mention several other things, especially that I see the reeve does not take his own medicine and go home when the curfew bell rings. (Great laughter.) Of course I cannot be taken in until he goes home, and so have to stay here.

Now, this question of dairy management is one of the utmost importance to us to-day. Dairy management in conformity with modern ideas of dairying underlies our whole success. No man can carry on dairying successfully now in the same way that he did it in 1860, 1870 or even 1880. There has been a constant evolution ever since I was a boy. Your worthy clergyman said he had been dairying ever since he was a little boy. And he told you that he "milked" the first year of his life. I am this much ahead of him, that I worked a "Victoria hand separator" the first year. (Great laughter.) Seriously if we are to dairy successfully to-day, we must thoroughly understand our business from a commercial standpoint. We must know the why and wherefore of it. We must know it from the very A B C down to the X Y Z. There is no room for mediocre work ; there is no room for guess-work ; there is no room for trusting to luck. Did you ever think that in the handling of milk you are dealing with something that has more against it than any other thing in the world ? Unless the dairyman has an interest in his work how can he be as successful as the great manufacturer ?

A consideration of dairy management settles itself, in the first place, into an examination of ourselves, and the machines with which we work, the care and the housing of your machines ; and finally the making and putting of your produce in the market.

I can only touch upon two or three matters in connection with this subject to-night. The first is an examination of the man. Did you ever see a man who was personally to blame for the failure of his business ? (Laughter.) It was always the government, the taxes, the railway monopolies—he never failed. It was always outside influences. A dairyman must either know he is a smart man or the other thing, and if the other thing, he must go outside the business and become somebody's hireling ; and you will always find his measure of ability by the distance through his head, right above his ears. No brains, no man ; no exercise of brain, no management. It is the exercise of brain-power which makes the man. So I want the dairyman to understand something about his business, and if he will not do so let him keep out of the business. Let him keep mules, for instance, because our dairy animal is an animal of fine feelings, sentiment and intelligence, and it is just as a man maltreats her that she will prove an utter failure.

If we are going into the question of dairy management, what shall we start with ? Well, you would say, start with the cow. I am acquainted with hundreds of farmers who when they get through the year do not know, so far as the cow is concerned, whether she paid them or not. We should have no waste surplus powers in our cows, but should train them to do a single thing, and that is, to give good milk. What good is a cow which you can only use in the dairy six months in the year, and then she has a calf and you hire another cow to act as wet nurse for her? The sooner we learn that cows are machines to do certain work, the better. Life is terribly short. There are only five more years in this nineteenth century. We cannot work out experiments to find for ourselves about things which have already been discovered. Let us set to work to do the thing we have to do. We must have a cow for a certain purpose.

Now, we are here, I suppose, to talk creameries. I believe the creamery should be to pioneer, to precede the cheese factory business. I am not sure but we are making cheese enough now. To-day in new countries the creamery is the pioneer of all dairy operations. You cannot afford to fight the market single-handed as dairymen. Can you imagine a man who is more helpless than one with a pail of home-made butter on one arm, and a basket of eggs in his hand, 1,500 miles from the market? If there is one such, please show him up. And what does he do? He wants to turn that produce into money, but he finds there is no money in it, only barter—and so the eggs are exchanged for groceries, and the butter is traded for coffee and salt fish, even up. But when one hundred and fifty farmers in a locality combine, and have this butter made by the best rules, and it becomes one great aggregated product, so that it attracts the attention of the large dealers, that moment this man, reinforced with the produce of the other one hundred and forty-nine, has a basket of butter which becomes a commercial force, and, put into the channels of commerce, it attracts. Without an effort Mr. Derbyshire is on hand with money to buy it, and more. If these men singly had 10 lb. each, together they have 1,500 lb. every morning. You at once cease to be traders and at the mercy of market barter, but become commercial correspondents, and have something to demand of the market, for you have something that the market wants, and something that the market is going to pay you money for every week. When this farmer has money in his pocket, and knows that Mr. Derbyshire is going to pay him more next week, you have lifted this man up on to solid ground, and he meets the world as an equal, and with a business air he says, "I am an independent farmer at last." (Applause).

Now, another thing comes up, and that is cost for the single equipment of the farm creamery, as against large co-operation. If we go to the market singly we must supply the best, and what does that imply? It means hand separators, new churns, and a whole lot of things that will probably cost not less than $200. For those one hundred and fifty farmers this would mean $30,000, while the cost of a big creamery to do the work of all would not exceed $20 each. Of course many will say that it does not cost anything to make butter at home. I am convinced that butter made at home is very dearly made, just in losses alone. Unless the best apparatus is used, the losses in creaming are heavy, and tests that were made under my own eye the present winter showed losses in butter-fat from one-quarter to one and one-quarter pounds of butter-fat to one hundred pounds of milk, and the operators were sure that they were doing close work. Can you afford that? No. But you say that the pig consumes the skim-milk and so gets the benefit. Can you afford to feed a pig on 20-cent butter when a pound of oil meal costing a cent will do him quite as much good? Thus you see that with the modern ways of creaming milk enough is saved to pay for the making of the butter.

But then comes this question:—The man says "I did not make the butter; mother made it, and it did not cost much." At a creamery meeting I made a proposition something like that, and one of those little fat, short-in-stature Germans said "Vots dot you say? vot's dot old vooman of mine do if she don't make butter?" Sometimes we think we are getting the women to do a lot of work for nothing, or what is next to it. We pay in promises. If we decide to make butter, let us do it co-operatively, each doing his share, and each doing all in his power to make the very best, and in this way reach high perfection. There should be no underhand work—a species of underhanded "nigging." Of course you would do nothing of the kind—it is always your neighbor. What a scamp he is! (Laughter.) But we must not be taking too much cream off for the coffee—so much that the good woman is obliged to *stir* some of it to keep it from spoiling. Sometimes we forget to milk old " Brin," and for fear that the cream will sour the next mess that goes to the creamery, if mixed with it, we take it off, but do we ever think that the skim-milk should have been left at home with the cream ? You see that often what is only a speck in front of our own misdeeds grows to the full size of a stick of timber in front of our neighbor's door. (Laughter.) Only the best can be realized by each when all do their very best, and have the motto " Thou God seest me " ever hanging in front of us, with a fire-red border about it. (Great laughter.) Of course nothing like this would be needed in Canada. (Laughter.)

In this matter of creamery method and practice let us stand shoulder to shoulder for better things, as if we in the day of judgment were to answer for all deeds done in the body. Not only let us do our best, but get the best help that we can and pay accordingly, and if a bonus of one-eighth cent a pound paid to the maker will cause him to do better work, let us pay it, and instead of bringing down prices let a premium be paid for the best. Such a course will, if good material is supplied, cause the finest goods to be made and then when the returns are received from Montreal we can rejoice, and if need be " hang the banners on the outer walls," for the price is the best, and we shall feel that we are " out of sight." (Laughter.)

Another thing is to be looked after, and that is, how is this matter of creamery practice to be inaugurated, and what have we as producing material to work with, and to draw the line at some point in special dairying, because, as never before, is it demanded of us ; and in creamery work and cheese factory practice there is need of wide divorcement, rather than closer union, as we hold their uniting is not for the best interests of all, but rather a detriment, that works lasting injury, but when run separately they are of lasting benefit and aid in substantial dairy progress.

What are we going to do in this locality ? Are we going to make butter ? Are we going to make cheese ?

To-day the two avenues are cheese and butter. Please don't make both in the same factory, because the cheese will have to be sent to the market with some of the other cheese rubbed on to it. Make butter when you are making butter and cheese when you are making cheese. Deal with the cheese business in summer and the butter business in winter. Why do I say " stay " with the cheese in summer ? What are we doing with the food we raised on the farm last summer, and what channel are you putting it into that you can show dollars for it next spring ? If you cannot show anything for that food next spring, you had better never have raised it at all. Now, what are we doing with the food ? How many have cows not giving milk, which are eating expensive hay and other feed, and won't give milk until they are turned out to pasture in the spring ? Will that pay your taxes or the salary of your minister ? One of the greatest loses that the farmer sustains, is in feeding either worthless animals or animals that are not productive. The facts are that to feed an animal for a certain period merely to sustain life is not profitable. Where are the returns for good food fed to a blind or worthless horse, a horse not worth $5, and consuming $25 worth of food ? Mr. Derbyshire put it neatly to-day when he said : " where has the corn gone in profitable feeding when fed to a pig that will crawl through a smaller hole in April than he could the previous October ? " If we are simply raising food to feed without reference to profit or substantial growth, or to cows that give no milk when feed is worth the most, is that not what has been called " woodchuck farming," feeding out in the winter that which was produced in the summer to come out spring poor—to do the same thing over the year to come ?

Now if you have a good cow fresh in October and a good store of mixed feeds grown largely on your own farms, and between October and April you could sell $40 worth of cream, you have put food and labor into productive channels and you then know that you have turned both work and feed into money, and the winter months have become profitable ones instead of months of outlay. How many of us are having incomes this winter that equal our " outgoes ? " On the other hand, the moment we make 365 days of summer on the farm, by having warm barns, plenty of feed and cows in these barns that are giving milk, we are then in line to talk dairy management. Any man who dries his cows off in the fall, and uses them through the winter simply as manure makers, and fuel burners, with which to keep his barn yards warm, is not doing the best that he can, even if he waits until grass is cheap, and milk 65c. one hundred lb to do *comfortable* dairying. The man with the winter dairy really dairies the best parts of the year, for he takes in both the fall and spring months, and the cows go dry only in August, and this is the time when harvest presses most and milk is cheap. In this, really all-the-year-round-dairying, we give the boys something to do on the farm in the winter, and instead of their going to the city to find employment, they find it at home, and a living, and as soon as they get interested in this new life on the farm, they will not desire to leave it, and when they come to this conclusion, the neighbor's girls conclude to stay with them. (Laughter.)

Now, if we decide to be dairymen we have to make up our minds whether we are to be creamery men or cheese-makers. We have to go down the avenue of "cowology," and find out about the results of good breeding, and get the best breed of cows to make butter for us, the breed best fitted for the cheese factory, and another to give milk for the city. In the case of the last mentioned, you should not need to buy a cucumber pump when you buy the cow. (Laughter.) Did you never think that form is everything to purpose? Does a trotting horse look like a draught horse? Does a hound look like a rat terrier? Does an eagle look like a goose? Does a man buy a Percheron horse for speed? Does he buy a trotting horse to take into a lumber camp? He does not do anything of the kind. Just as soon as he realizes that he has a purpose, he is on the road to success. But many dairymen start in with anything and everything for a cow—anything that will eat hay and give milk is regarded as a cow. So we find everywhere through the country a brindle cow, and the cow and the man wrestle with nature and fate, and at the end of the year he does not know what his herd has done or earned him, after paying cost of keeping and labor. To-day we have some four or five distinct breeds of dairy cows to choose from—the Jerseys, Ayrshires, Holsteins, Devons, Guernseys—but we discard all these, and, taking our own judgment, try to envolve a good dairy cow out of the old brindle, when we should take the experience and results of dairymen and breeders and get success without this long line of guesswork breeding. What did the best cow you ever had look like? Did she look like a 1,400 lb. steer? Did she have a blocky head with dull eye? No; she was a little race horse in form and temperament. I want to say the thing that makes speed in a horse (nerve power) is the very thing in a cow which makes milk in your pail. There are two very distinct types of horses. One has speed on the one side, and the other is a draught. If we mix milk and beef types in our dairy cows we soon get a general purpose cow—general for everything and good for nothing. In dairying it is "handsome is as handsome does." If a cow will give you 300 lb. of butter in a year, I do not care how many angles she may have. It is the butter we are after; not the beef. We are finding that we are putting feed into channels that never return us dollars and cents in milk or butter.

What shall be done along these feeding lines? There is no doubt to-day that food fed to a good dairy cow is put into the most profitable channel of production of any of our animal industries. We feed the steer for twenty to twenty-four months and in all that time he does nothing but eat, and at last we kill him to get our money out of his carcass, ending his life to solve the problem, and if we get five cents a pound on foot we have done very well. At the same time the cow standing beside him, has, on the same ration, made a pound of butter a day, worth twenty-three cents, and for every pound of butter there was three quarters of a pound of casein, as valuable for food as beef, and one and a half pounds of sugar, as valuable for the pig as any food, or at least three and a quarter pounds of food solids, and all digestible, while of the 300 pounds of steer growth more than half was lost in dressing and cooking, and half of the balance was water Then the steer must be replaced with another, while the cow repeats the process for ten years, settling with her owner every night, leaving as much fertility for food consumed as the steer, giving a yearly increase to the stock of the farm, while the steer can only make one contribution to the food of the world, and does that with his life. Now, if we can provide this cow with a cheap and abundant ration, and can give her the needed comforts, and milk her when we should, there is no source on earth where as nutritious and as fine a food can be obtained with so little to be wasted in use or digestion as is given to us by this cow. In one sense she is queen of all our farm animals and entitled to our respect, for she owes us nothing. In fact we are debtors to her daily. So I would say let the man on the great plains raise the beef. Let us make the most of the rations raised on the farm by making cheese and twenty-five cent butter, using the wastes of the dairy to grow pigs as an adjunct, and then we shall realize as never before what first-class dairy management is and how it may be accomplished.

Then, we must decide what cow to keep, which is a matter for each man to best decide for himself, as it is not part of my business to recommend breeds; but I say that pedigrees do not make cows good; it is only the record of breeding and the recorded excellence of the individual members of a family. Pedigrees in and of themselves have little to do with the mess of milk that the cow gives and will not make the cow give milk. That quality was this cow's heredity—nature's gift to her, and in her after life man and his skill has little influence. This cow is born with an individuality and dies with about the same stock of traits. The cow that comes into the dairy giving a flow of thin white milk dies giving practically the same kind. The cow of copious flow is always a good cow if the milk is properly balanced with butter-fats, but feed will not balance them; it will only keep up the flow. Never "fool away" good food trying to convert Holsteins into Jerseys, or to make good cows out of poor ones; and do not believe that the breed is all in the feed, else twelve quarts of oats a day would convert all the horses of Canada into Directums and Nancy Hanks'. If a cow on a full ration will not give a paying mess, sell her to the man who is always telling that he is feeding scrubs and ordinary cows so that they soon become fourteen to twenty-one pound cows; otherwise direct her steps to the bologna factory. (Laughter.)

I am strong in the belief that cows should be raised on the farm from the best cows. Use sires from the best producing families that can be found; and it may not be an unwise thing to retain this sire and breed him back on to one or two generations of his own "get" to intensify and establish the lines of excellence that we wish to preserve, rather than to diffuse it by bringing in a new family influence with each generation, and consequent antagonisms. While cows are individuals, yet we must not discard pedigree. It keeps families together, enables one to make excellencies, and like is more apt to beget like than discordant factions mated. We can only preserve the dairy form by using sires that conform to the type, and that form is the direct contrast of the blocky, beefy form—a body of angles and a skeleton held together with muscle and nerves and not by tissues of fat. Let the form be as perfect as it may, there must be the good, well-balanced udder, and in choosing a cow the udder counts a full thirty-three in the hundred points of excellence. This udder is a born inheritance. To give rich milk there must be more than rich food. Nature must first provide the mechanism. No after-care can reconstruct glands. Here it is that heredity makes its bequests, by good mating of high excellencies. Old brindle may be a good cow, but she has no established lines of excellencies, and so rarely, if ever, has a heifer of performance equal to herself.

Whatever the cow or the breeding, she must have the care that goes with high performance, which amounts about to an artificial condition of existence. If the cow is to be milked in the winter these things are all the more imperative. As this cow is a machine to do certain things, to ask of her to do things outside of the line of dairy performance is to impose things upon her that cost in food and the vitality of the animal. We must give this cow more than the feed of support. The surplus food that she consumes makes the milk and it should not be divided with any war of nature's elements. Cold and milk-giving do not harmonize well together. The man who trifles with the economies of his business is defeating his own best purposes, and the man who best succeeds, is the one who sees all these advantages and turns them to studied account and thus adds to measured success. The care of this winter milker is one of no small magnitude, and it is one as to which there is much honest difference of opinion. We are firm in our belief that this cow needs little exposure or exercise through the cold months beyond the freedom of a halter, a roomy stall, and a warm, light and well ventilated stable, with drink somewhat removed in temperature from ice water. In this winter mangement of the cow, for best returns for the creamery, we do not think that alternately freezing and thawing her will make her more healthy or vigorous. In the summer, in June heats, we never think of making this cow hardy ; and why in winter ? If it is so essential in winter why should we not in summer give this cow a daily instalment of cold storage ? Why at one season of the year and not at another ? Make this cow comfortable in every way, and let her put her food into milk and not use it to grow extra hair for self-protection. Someone will say that this is against nature. Old Peter Smith says the same thing. This man has said a whole lot of things that have not come to pass. He said that stabling cows would make them feeble ; that corn fodder would destroy their vitals ; that if the barn was battened they would smother ; that if milked in the winter they would freeze ; that if fed silage the acid would eat up their stomachs, and so all along for forty years ; and now his last stand is that a cow tied in a comfortable stall all winter will loose her legs for want of use. Have you known cows to die by this modern care before spring, and what are the records of cows that have had nature's full measure of exercise? Have you ever known of cows getting down in the winter, and cowhides being sold in place of butter ? Then cows are best watered in the stables. Which will do the most harm and cause the cow the greatest discomfort, 100 lb. of ice water for a daily drink, or 100 lb. of water at 60° ? Sudden and severe shocks to the system cost in milk, and must be avoided,

Do not tie this cow in stanchions, but if you do use them, may the Lord direct you as soon as you reach home to take the axe and hew them into kindling and substitute some of the more humane ways, and not keep a relic of old New England's barbarity to man—the pillory—in the form of stanchions in your barn as a caricature of "Cow comfort," a machine with the only argument in its favor from the man's side of being a labor saver in doing his barn work.

You ask if I like the plan of keeping cows for winter work in the stables for 14 weeks ? Yes ; and after five years I am finding that the cows are better, and if anything are getting too heavy. But you will say that the calves will be weak because of the mothers' idleness. But these cows calve in the fall and they have the exercise of the pastures for six months, and there can be no plea here. It is a question of cause and effect from first to last, from start to finish—one of dairy management on skilful plans, and not of dairying by luck, guided by moon signs and charging all defeats to the administration (Laughter).

So we put all kinds of dairy management under the head of progressive intelligence, and the yet greater power of self-judgment and recognizing self in selecting the cow, putting her in better condition and feeding the best food possible, you will get the very best milk and make it in to the best butter, and put it on the very best market, and so get back the most money for your intelligence. Canada has a great future before her. The man who best recognizes that if he expects to take a high place he must hunger and thirst for knowledge along the line of his work, will make the most successful dairyman, whether he shall live in Canada or the United States. (Applause.)

The PRESIDENT thanked the residents of the village and district, and particularly the ladies, for attending the Convention in such large numbers. He also, on behalf the Association, specially thanked the ladies and gentleman who by their musical efforts had so largely contributed to the enjoyment of the meeting. He expressed the hope that from the addresses all would recognize the importance of doing everything in their power as dairymen to cheapen the cost and lengthen the line of production, and so, by keeping the young people at home and educating them for intelligent work on the farm, do a grand work in the interest of the country.

The meeting then adjourned until the following morning.

SECOND DAY—MORNING SESSION.

The Convention resumed at 10 a.m., President DERBYSHIRE in the chair.

CHEMICAL ADVICE ON DAIRY PRACTICE.

Mr. Frank T. SHUTT was again called, and addressed the convention on the subject of "Chemical Advice on Dairy Practice." He said: I am exceedingly sorry that there is not a larger attendance this morning. I do not know if the reason for so few being present is that we were surfeited with long speeches last night. It is always a good sign, I think, to see a large attendance at the working sessions of the convention, and I hope the farmers will turn out and fill the hall before we proceed very far in the business of the day.

You will remember that I told you last night there is a very intimate relation between chemistry and agriculture. I am going to speak this morning with regard to the relation of chemistry to a special branch of agriculture, namely, dairying. You will remember also that I said there was scarcely a farm operation carried on by ourselves or by nature upon which chemistry has not some bearing. For this reason it will be very necessary for me this morning to restrict my remarks to one or two subjects. To go over the whole ground of dairying, in relation to chemistry, would take far more time than is at our disposal. I shall content myself, therefore, by giving you a few illustrations which will serve to emphasize that important and valuable aid which chemistry affords to dairying.

Let me very briefly define the terms chemistry and dairying. All this world, or in other words, the matter of which it is composed—whether gaseous, solid or liquid—is made up of certain chemical elements, fundamental materials. Chemistry has for its study the composition of these different kinds of matter and the laws which govern the changes they undergo. It is the science which finds out the nature of substances and the various phases and transformations through which, by the aid of a vegetable or animal life, as well as by atmospheric agencies, matter passes. Dairying has for its principal object the production of milk, and secondly, the manufacture of the milk into butter and cheese. Let us, then, first ask how chemistry comes to aid in the production of milk and the manufacture of the dairy products. The production of flesh and milk in the animal is brought about by chemical changes at the expense of the food consumed. There is therefore a direct relation between the food we give to the animal, and the milk she produces or the flesh she puts on. By the physiological functions of the cow, she is enabled to convert the fodder into milk. A similar conversion of food materials occurs in the vegetable kingdom. Plants are dependent upon the soil, the rain and atmosphere for their nourishment and support. This gives us a further step in the argument, and shows us the intimate relation between the soil and plant food on the one hand, and the ormation of milk and dairy products on the other.

Now I propose that we confine ourselves this morning to the consideration of two matters, which at first may seem to you to have no direct relationship, viz., manure and milk. I wish to say at the outset that without manure we cannot get milk, and I shall very briefly put before you some arguments to substantiate that statement.

If we continuously crop our fields without returning to them plant food we shall assuredly see the yield steadily, but very surely, diminish. The yields will become smaller and smaller, until finally we shall arrive at the condition of affairs when it is no longer economical or profitable to grow certain crops. Chemistry explains how that is. The plants have taken from the soil year after year certain elements, until the soil is left to a great extent exhausted of them. When this occurs we cannot farm profitably. Let us consider the case of the cow. The cow receives a liberal supply of nutritious food, and gives a copious flow of milk. If, however, we refuse or neglect to feed her in proper amounts with the kind of nutriment she requires for the production of that milk, she refuses to furnish us—because she cannot create, only transform—with milk in economical or profitable quantities. It is just as well for us to bear in mind at all times that nothing in this world is created by us, by animals or plants; that the sum total of matter to-day is just the same as it was hundreds of thousands of millions of years ago. The farmer is an *agent*, and in order to be a profitable agent he must be a skilful agent. He must be skilful in transforming the plant food of the soil into products of the soil. He must go further and transform this plant food into animal food and other products, such as milk. A consideration of all this brings us face to face with the fundamental problem of keeping up the fertility of our soil. We cannot feed our stock without the proper food, and unless we feed nutritious food, and in liberal quantities, we cannot pursue this dairying industry with profit to ourselves.

Let us consider for a few moments this matter of the fertility of our soils. Such fertility depends chiefly on three factors: 1. The amount of available plant food in the soil. 2. The good condition of the soil, known as tilth. 3. Favorable climate, which means a right degree of warmth and moisture. We have but little control over the third condition; but with respect to the amount of plant food in the soil and the tilth we should be active agents in order that we may obtain the best, the most profitable results

Perhaps I should say a few words with regard to tilth before I go on to speak of plant food. Proper drainage more particularly in clay soil, is the chief factor in bringing about a proper condition of the soil. Plowing and harrowing, and cultivating and rolling, at the right time, are other factors. Plants need freedom in the soil for the extension of their roots. By means of the roots they acquire the mineral matter and nitrogen that they store up in their tissues. If the soil is heavy and of such a character that the air and the rain cannot permeate it, we cannot expect our crops to have a luxuriant growth Drainage, then, and plowing, and these other means of mechanically stirring the soil, are necessary for bringing about that condition of the soil which allows easy growth and spread of the plant roots.

I may now proceed to point out the necessity of not only maintaining the amount of available plant food in soils, but the increasing of such—in other words, the enriching of our soils by manures. I do not think it would be well-spent time for me to enter to-day into details with respect to "commercial" or "chemical" fertilizers. I shall content myself, therefore, with speaking of the use, the application and the preservation of barnyard manure. There is not any subject discussed upon an agricultural platform to-day of such importance as this question of barnyard manure. The reason why it is necessary to continually manure our lands we have just stated. We have, by growing crop after crop and selling them off the farm, diminished the plant food in the soil. If we wish to increase our yields, and do a little better, we must return the plant food taken from the soil. The most economical way to return that plant food is in the form of barnyard manure. It is my duty to point out that we, as an agricultural people, are losing vast sums of money by the carelessness with which we preserve our manure. We have no data—we have no opportunity of obtaining data—to show the loss to Canadian farmers in this way, but it must amount to something enormous. By exposure and the washing out by rain of the manure pile, we sustain a very heavy loss in the elements of fertility. Perhaps you will remember that I said last night that the manure obtained on the farm contained about 75 per cent. of the plant food taken from the soil by the plants and on which the animals had been fled. Plants take part of their nourishment from the soil and part from the atmosphere. The latter we need not trouble about, but in regard to the plant food taken from the soil we should endeavor to return it, not only in ample quantities, but in the very best and the most available forms. By feeding the home-grown crops on the farm we are practicing good economy—we are enriching rather than impoverishing our farms.

The chemist, on investigating this plant food question, finds that there are about sixteen chemical elements used by the plant. Further, that as a matter of fact, it is only necessary to restore to the soil, in order to maintain or increase its fertility, three of those elements. You see the matter is exceedingly simplified by knowing this. Why is it that only three of those elements are so essential? The other elements are necessary to the growth of plants, but the soil contains such a large quantity of these, compared with the small quantities required by the plant, that it is not necessary, as a rule, to restore them to the soil. These three essential elements I would like you to remember. They are nitrogen, phosphoric acid and potash. Barnyard manure contains those three elements in quantities very well suited for the growth of our farm crops Therefore it is that barnyard manure is known as a *complete manure*. Superphosphates supply phosphoric acid only. Muriate and sulphate of potash and kainit supply potash. Sulphate of ammonia and nitrate of soda furnish nitrogen in an available form. In barnyard manure, however, you have all three, and in a condition and in proportions suitable to the growth of most of our farm crops It is, therefore, evident that we have a very valuable asset in barnyard manure, and one which we cannot afford to overlook or ignore. I wonder what the condition of affairs in this neighborhood are?—whether the manure is just thrown outside the building, exposed to every rain? No care is taken of it whatever in many parts of this country. The rain which falls washes out the plant food, which, of course, we should take the greatest care to preserve. It is well known that in many parts of the world the profit lies just in the preservation and skilful application of the manure. That is to say, the margin between profit and loss depends on whether we make the best use of that manure or waste it When we realize that fact you will see how important a question it is that I am speaking to you about this morning. The efficiency of barnyard manure largely depends on the condition of the elements contained therein. We may have a large amount of plant food which may not be assimilable—in other words, in an insoluble condition. For instance, we may take rock phosphate and put it on the soil; there will be no return for many years, because that phosphoric acid is in an insoluble condition. Let us remember that plants can only take nourishment in two forms: either in the form of a gas or dissolved in water. The plant food to be available must be in a condition of solubility, and that is one reason why in barnyard manure we have such a valuable fertilizer I have told you now something of its nature and the necessity for its use. I want to say just a few words with regard to its preservation. The waste which occurs by the rain falling on the pile of rotten manure is a very great one. In this way we decrease the value of the manure, for the simple reason that those dark streams which run away from the pile contain the very best part of the manure. When in the spring we carry out to the fields what has been leached by rain and melting snow, we are spending our labor upon that which is comparatively valueless. There are various methods of preserving manure. We must begin right in the stable. We might with advantage use absorbents there In the first place, the litter that we use—the straw—is an excellent absorbent, and we should see that sufficient is supplied, not only for the comfort of the animal, but to soak up the liquid manure. The solid manure is not nearly so valuable as the liquid manure. Therefore, when we are saving the solid manure and allowing the other to leak away into the barnyard, we are losing a tremendous percentage of that which we should retain. The litter itself contains plant food; but straw, as you know, does not of itself easily rot in the soil. Until it partially decays it is of no use as a fertilizer. The fermentation started by the presence of the solid and liquid manure converts the insoluble matter, both of the straw and of the excrement, into a condition in which it can be used by our crops. I do not think that the plan of conducting the liquid manure into tanks is one which could be used with economy or profit in Canada. Our climate in winter does not favor that plan. In other countries the very greatest care is taken of the liquid manure, and it is run off into tanks, etc. But I think it is far better for us to ferment the liquid and solid together in the heap rather than keep them separate. Straw has a large amount of mineral matter and nitrogen, which are converted into an available form by the rotting which goes on in the pile.

Another absorbent which I wish to call your attention to this morning is air-dried muck. All through Canada there are large deposits of muck. At Ottawa we have analyzed samples from many of these deposits, and we have come to the conclusion that there is a very large amount of plant food stored up in this form. It remains for the farmer to use and treat this material rightly. We have found that the muck, after being dried, contains, on an average, between thirty to thirty-five pounds of nitrogen per ton. Now, where did it get this nitrogen? What is muck? It is the semi-decayed remains of a past vegetation—of plant growth which has taken place year after year. These deposits are the result of ages of decay of this semi-aquatic flora. Muck contains small amounts of potash, of lime and phosphoric acid—all elements of value for fertilizing purposes. In addition to these we have nitrogen and humus. It is the nitrogen present which gives muck its chief value as a fertilizer, all fertile soils are soils rich in nitrogen and in humus—humus is another name for semi-decayed organic matter of a vegetable origin. We have, therefore, in swamp muck a valuable fertilizer if properly treated. The plant food in muck, I should say, is not directly available as a fertilizer. That is to say, it must first undergo changes, brought about by fermentation and through the agency of bacteria, before crops can make use of its fertilizing elements. Neglect to recognize that fact has often led farmers to believe that there is no value in muck. I therefore wish to impress upon you that by the fermentation of the muck—more especially when fermented or composted with barnyard manure—its valuable constituents will be made available. To sum up: Its use anywhere and everywhere that there is liquid manure to absorb, is to be strongly recommended. Thus not only shall we retain plant food which would go to waste, but at the same time render available a vast amount of valuable fertilizing material which is contained in the muck itself.

In order to properly ferment manure, moisture and air and warmth are required. By moisture I do not mean to say that the manure pile requires to be exposed to every rain. I mean that it requires to be kept in a moist condition. When manure is long exposed to a hot sun, much nitrogen is lost. It is converted into a volatile form, known as ammonia, and this escapes into the air. The same thing occurs in the horse and cow stables, more particularly the former. The evaporation, or rather the volatilization of the ammonia makes the air of the stable offensive to both eyes and nose.

I believe it is better to ferment horse and cow dung together, the one being a slow and the other a rapidly fermenting manure. The one helps the other. The changes induced turns the manurial element into more assimilable forms.

I must not, however, forget to say something as to the best method to pursue in the treatment of muck. Dig it during the winter and pile it. The winter weather will mellow it, and make it suitable for use as an absorbent. The result will be an excellent absorbent. One hundred pounds of such air-dried material will absorb as much as 300 lb. of water, so that from 100 lb. of the air-dried muck, if allowed to take up all the liquid manure it can hold, we shall have 400 lb. of manure. Another thing. The liberal use of muck will keep the whole place healthy, for it will keep the surroundings free from putrifying matter. Manure is not for use in the farmyard well. In too many cases it rapidly finds its way into the well, supplying food for our herds instead of our plants.

A good deal has been said, and many opinions have been held, as to the proper way to preserve our barnyard manure. I have no doubt we could have an interesting and profitable discussion, if time permitted this morning, on that matter. However, we must understand the principles and then we shall be able to apply them for ourselves. The preservation of manure cannot be pursued the same way in all parts of the Dominion, because proper fermentation is largely a matter of climate. If I were speaking to a British Columbian audience I should say, that owing to heavy rainfalls in certain seasons, the most economical plan for them would be to keep their manure under a shed or roof; for undoubtedly the rains which continue there week after week would leach away the most valuable portion of the manure. Whether such would be the best plan for us we must work out for ourselves. I know farmers conducting their farms on good and profitable lines in Ontario who tell me that they have a much more valuable manure by protecting the heap from the heat of the sun, on the one hand, and the rain on the other. What we aim at is to keep the manure from drying out—that is, fairly moist—and to have the heap fairly compact, not too much and not too little air. Fermentation is carried on in the heap by germs—certain microscopic plants. These are the agents by which manures are converted into plant food. These very same agents are at work in the soil converting the nitrogen in the humus into the form of nitrates—a form of nitrogen most useful to plants. When does this process of nitrification go on? During the winter? No. It is when there are right conditions of moisture and warmth, as in the summer months. Therefore we wish to keep the manure pile, whether under cover or not, moist, and at the same time in a condition that the air may to a certain extent permeate it. If the heap dries out, fermentation goes too far and the manure is spoiled.

Mr. Rowland: Where muck is not available, would sawdust answer in the stables?

Mr. SHUTT: It is a very good absorbent, but not so good a fertilizer. It contains resin, which makes its decay in the soil a very slow process. Sawdust is useful on many soils for its mechanical effect Coal ashes contain no plant food, and yet we know that the application of coal ashes brings about a better tilth—a better mechanical condition. Sawdust, on heavy soils, acts in the same way.

Mr. ROWLAND: What about land plaster?

Mr. SHUTT: Land plaster is an excellent absorbent, and supplies lime and sulphuric acid. After the three most important elements, mentioned a few moments ago, comes lime. Many farms can be benefited by an application of lime, of gypsum or of marl. Plants do not require much sulphuric acid; nevertheless many soils may be improved by its use in the form of gypsum. Further than that, the action of the gypsum in the soil converts certain locked-up forms of plant food into soluble conditions, and more especially is that true of the potash in the soil. Gypsum, therefore, not only feeds the soil, but liberates certain elements of plant food in the soil. With regard to its action in the stable, it fixes the escaping ammonia, converting it into a useful compound that is not volatile. It is, therefore, exceedingly valuable in its double capacities of an absorbent and fertilizer.

Mr. J. S. PEARCE: What about the use of road dust?

Mr. SHUTT: That would depend on the character of the material of which the road is made. Many roads are made of limestone, and consequently the material from such a road would possess a large amount of carbonate of lime—the value of which I, a moment ago, mentioned—in a very fine condition. Much road dust contains a large percentage of animal manure, while another sample may be almost pure sand. You have to consider where the dust comes from. If it is from a road which is only used once or twice a day there is not much fertilizing material in it. In dust taken from a road in the city of Toronto you would probably find a large amount of manurial matter. The fine mechanical condition of road dust, however, would make it of service to many soils.

Mr. R. J. GRAHAM: Some years ago this muck question was discussed, and the use of muck advocated. Both Senator Read and myself have large deposits on our farms near Belleville. We have permanent pasturage and used the muck in connection with that. We drew out the muck and deposited it in heaps and let it lie in this way over winter, and then we top-dressed the permanent pastures with it. There are 20 acres in the field I have been expermenting with. I used the muck on 5 acres of this field, and so far I have seen no results from its application. The other 15 acres do about as well apparently.

Mr. SHUTT: What kind of soil is there in the 5 acres?

Mr. GRAHAM: In the 5 acres there are about 2½ acres of sandy soil, 1 acre of clay and 1½ acres of black loam. There are three kinds of soil in that 5 acres.

Mr. SHUTT: I think, perhaps, I can throw some light on that. I have mentioned that we may have plant food in such a condition that it can at once be taken up by the plants, and we may have it in a condition not available for plants. I said a moment ago the most economical method of using muck would be to ferment it with some other material, and the reason far that advice was that the fermentation brought about by the manure would render the plant food in the muck available. I do not think in the majority of instances it will pay to take our muck, and, after piling it, apply it at once to the soil. It will of course, in certain soils bring about better conditions. For instance, it will in a sandy soil increase the moisture-holding capacity, but it will not add to the store of immediately available plant food. The plant food in such muck is locked up or insoluble. Moreover, muck as it comes from the swamp is more or less acid. Now, a soil to be productive must be neutral or slightly alkaline. We must, as it were, partially digest its constituents, or the result in many cases will not be apparent. Because you do not get results from the direct application of muck as taken from the swamps, do not run away with the idea that it contains no plant food. We must study the requirements of crops and prepare their food in such a way that it is in a digestible condition. I can use that term "digestible condition" with equal applicability to plants as to animals. When we give plants the muck as it is taken from the swamp we are giving them food, but not in a digestible form. The proper way is to compost the muck. If for this purpose we cannot use barnyard manure we must get marl or wood-ashes. Marl is often found in conjunction with muck deposits. The two go very well together in the compost heap.

A. VOICE : Would not lime mixed with muck be a proper thing.

Mr. SHUTT : A certain amount of lime would be a very valuable thing in bringing about this condition of fermentation of which I have spoken.

Mr. GRAHAM : Do you think the plant food of muck put directly on the land as taken from the swamp would eventually become available?

Mr. SHUTT : Yes, I think so. But on most soils, it would be a very long and slow process.

Mr. GRAHAM : In this particular case the deposit is two miles from the barn, and it would not be convenient to take the muck that distance. The question with me was whether it would become available as a fertilizer when put on the land alone.

Mr. SHUTT : Undoubtedly I think so, but the process is an exceedingly slow one. I think in these days of competition, we should get all we can out of our manure, and as quickly as possible, putting the food into the soil and taking it out as crops, using it through the cow and thus keep the fertility of the soil going as much as we can. I do not think we can afford in these times to wait for the action of nature; we should rather assist nature.

Mr. GRAHAM : What do you consider the value of wood ashes as a fertilizer?

Mr. SHUTT : I value them very highly. In them we have the great Canadian source of potash, one of the three elements of plant food necessary to return to the soil. The ashes on the farm should be carefully looked after. Wood ashes mixed with muck and allowed to remain six or nine months will give you a manure very rich both in nitrogen and potash.

A VOICE : Would you use wood ashes as an absorbent.

Mr. SHUTT : No, because the potash of the ashes will have the very opposite effect to that desired. It will liberate the nitrogen of the manure, in a volatile form, and the ammonia will be lost by its escape into the air. So do not mix the wood ashes with the barn yard manure. Ashes are very excellent in their place, but that is not their place.

Mr. Shutt then proceeded to speak on the composition of milk and dairy products. As that portion of the address was delivered at Gananoque, readers are referred to the report of the Eastern Ontario Dairymen's Association, held in that town, for what was said on that important subject.

The subject of pure water being referred to in this address, the following discussion was called forth.

Mr. D. M. HALLIDAY : Tell us how to get the best well.

Mr. SHUTT : That must be determined by the conditions of the locality. For instance, you may be near a running stream of pure water. But do not sink a well where it must naturally and of necessity become a cesspool. Have the right thing in the right place—pure water in one place and your plant food (manure) in another. With regard to water analyses made at the Dominion Experimental Farm, Ottawa, let me say that we shall be pleased to help our farmers and dairymen by analyzing samples which may be sent to us. But I want you to write me first for the proper instructions for collecting and shipping the waters. It is necessary that the water should be sent in the right kind and size of bottle. The bottle must be absolutely clean. If you will write me I will send you the printed instructions. (Applause).

THE FIELD OF EDUCATION.

Mr. J. S. Pearce, of London, was next called and addressed the convention on the subject of the above heading. He said :

Chamber's Encyclopædia says : "Education is an art—the art of drawing out or developing the faculties of human beings."

It is not my purpose in this paper to discuss the question of education in the ordinary term in which it is applied or understood, but what I am aiming at is to get a step farther in that direction.

A great many young men, and young women as well, have the idea that after they have ceased going to school their education is finished, and they are free to do as they like and go as they please. A greater or more serious mistake could not be made. A boy or a girl, man or woman, never made a greater mistake. Why, his or her education is only just begun, that is if we are to go onward and upward, and keep pace with and abreast of the times.

After our school days are over we are then our own educators, from that time onward to the day of our death. If we are faithful and honest to ourselves and to the great Giver of all things, who has endowed each and every one of us with faculties and abilities, be they great or small, we must keep up that moral and mental schooling and training to the best of our ability right through our lives. And, mark you well, our walk through life will show just how true and faithful to that duty we have been.

When we quit the schoolroom and take our place on the farm, in the dairy, in the creamery or cheese factory, in the office or workshop, we may lay aside our school-books ; but we must, if we are to succeed, take up other studies and read other books, papers and periodicals, and our thirst for knowledge must be just as keen as when we were at school

Can any one in this audience point to a successful man, or woman either, who has not kept up his or her studies in some form or other?

It is no mere chancework that has made the successful dairyman, business or professional man. His success has lain in the fact that he studied up his line of work and made himself master of that in which he was engaged. Is there anyone here who supposes that the prominent or successful dairyman, business or professional man has attained his position without hard work, long hours and close study? I tell you that only those who have passed through and attained these achievements can tell you, or have any idea of the hard work, long hours and close application that has marked their efforts.

We are here in this world to make the most and best use of the abilities and attainments with which we are endowed. Too many are content to follow in the wake of others, or do as they see others are doing. This is what causes all the crowding and scrambling through life. Skilled labor is always wanted and in demand. There is always plenty of room away up at the top of the ladder.

And, right here, I want to say a few words on the subject of reading, conventions and institute meetings. I have heard many say that they did not believe in books or agricultural papers, because the writers and editors were all writing on theory, and were not at all applicable in their case, and the same has been said of dairy conventions and institute meetings. Another says: "I cannot make any practical use of what these books and papers say ; their views and ideas are of no use to me on my farm." Let us illustrate this point.

You all eat bread, do you not? You also eat butter with your bread. You eat meat, also potatoes and many other good things ; but pray, show me the meat in your bones. Where in your bodies is the bread that you have eaten, or the potatoes or that butter? You will say : How foolish to expect to find these in your body. Just as well expect to put everything you see and hear and read into practice, or literally apply these subjects on your farm or in your dairy. Just as the digestive apparatus of our bodies draws nourishment from the food we eat, so should our minds digest and assimilate and draw nourishment from the various things we read about and hear at these conventions and other meetings. A wide-awake, vigorous mind always finds plenty of material for growth among the great variety of good things to be found in any good dairy or agricultural papers, books or conventions.

Every diligent dairyman who reads and studies and attends good meetings such as these will discover new avenues by which to reach nature's treasures, new and better ways of utilizing the gifts of the soil, new and better ways of living upon the fat of the land.

Now, I want to say to the young men and young women, as well as our cheese and butter-makers, that if we are to keep pace with the other countries that are now competing with us, and keep up the reputation and good name that we now have, we cannot rest on our oars. There must be a steady and continuous advance along the line of education and improvement. We cannot stand still. Instead of the few who are to the front in dairying (the picket line as it were), the whole force should advance and keep advancing. Resolve to be a success and make your mark. Make every step forward and never move backward. Begin at the beginning, learn principles and apply them in your line of work.

Learn why you till the soil and how the action of fertilizers, tillage, the sun and all the forces of nature are assisting you in your work. These forces will assist you without stint if you will only apply intelligence and common-sense to your work.

I listened the other day to an address by a prominent writer for a leading agricultural paper, who has a 35-acre farm. He has brought up the farm, in 15 years, from one so poor that it would not grow good weeds, to growing 48 bushels of wheat per acre. This gentleman claimed that by his methods of rotation and cultivation in connection with clover he could grow a good average crop any and every year, and he was quite indifferent about rain after his crop of potatoes and other crops are put in the ground.

For all young men who wish to know and learn of agriculture there is provided for them the two or three years' course at the Agricultural College at Guelph. For the cheese and butter-makers there is the dairy course, and for those who can only stay a few days or two weeks at the farthest, there is the farmers' dairy course. Every young man and every young woman who can at all, should attend one or other of these. It would be the best investment you ever made. You will never regret it. You will learn and see there all the advanced methods of butter and cheese-making. No young man who intends to farm as a matter of knowledge, as well as a matter of dollars and cents, can afford to be without this course. I know whereof I speak. I have watched the progress of this School for many years, have talked with the boys when at the School, have noted the effect on these boys and their after career, and I tell you frankly that if I had had the chance when I was twenty years old, or even thirty years old, that you have to-day, I would avail myself of this grand opportunity. Take advantage of this opportunity to get knowledge and education, and many of the difficulties and many of the bad mistakes you are laboring under will disappear and will be avoided. Knowledge in any department of life is a factor that pays for the getting, and the more knowledge there is on the farm the better for the farm, the farmer's family, and the community in which that farmer dwells.

I might go on and talk much longer, but it all comes to this, that the man who is trained will be the successful one, and if you have a farmer whose mind has been trained at the Agricultural College, or by reading books or agricultural papers at home, so long as he is educating himself he will be a successful farmer. A man must have brains nowadays to make a success of anything, and must use them. Every year that passes we are learning something new, and the minds of our men are being gradually widened. May the day be not far distant when all the dwellers on farms will see the value and importance of education and knowledge, and avail themselves of every opportunity to acquire that education.

If we ever take our place among the business men of the earth to which the laws of nature and nature's God entitles us, it will be when we make the very best possible use of the means placed at our disposal. I mean that it will be when we provide ourselves with the very best agricultural papers printed, when we regularly attend our dairy conventions and farmers' institutes, for these afford everyone a maximum amount of knowledge at a minimum cost. It will be when we cease to educate our brightest boys and girls at the literary colleges in order to send them into the learned professions. It will be when we change this and give them a thorough agricultural education, so that they may understand the possibilities of the soil and the feeding value of the different products of the farm. There is no business in which diversified knowledge is so essential.

He who does not love farming, and follows it as a hated necessity, is the man who will degrade his profession as far as a noble employment can be degraded. Had I the power as I have the will, had I the ability as I have the desire, I would speak continually and spare not until every dairyman, not only in this province but throughout the Dominion, would appreciate the importance of education and knowledge. (Applause.)

The PRESIDENT : I invite discussion upon this question. I agree that dairy education is something we ought to have more of. I quite agree with Mr. Pearce that if a man is to take charge of a cheese or butter factory he ought, out of respect to his calling in life, to properly prepare himself, and if there is anything which makes me sick it is to see a man undertaking to make butter or cheese who does not know anything about it. There is, as you know, a Dairy School at Guelph—your School, and you have to pay taxes, to maintain that School whether you take advantage of it or not; why not avail yourself of the offer for instruction, which it holds out by sending your boy there? Then, we have recently established at Kingston another Dairy School, so that we can give our young men in the eastern part of the province a thorough training, and carry the gospel of dairying right down among those who could not come so far as Guelph. I believe it will only be a few years until you who are butter-makers will require to show a certificate of efficiency and ability to manage a factory before you can find employment, and I say now, before this is demanded, you ought to qualify yourselves for the work.

Mr. WENGER : I think we must have education as well among the patrons of creameries That is where the responsibility rests to-day. Until we get proper education among them, we are not going to build up the butter industry of the country.

The PRESIDENT : You were right. but I want to show you that if you have an educated butter-maker, he will begin to disseminate knowledge from the creamery, just the same as is done now from every schoolhouse, and this knowledge will extend until it permeates the whole community. We want to engage a butter-maker, not because he will work for $20 a month, while another man wants $100, but because he is competent and capable to give practical advice to the farmer with regard to the selection and care of his dairy stock in such a way, that he can get the most and the best butter-fat for the factory. This Association has been doing more to impress the importance of this particular feature than all the rest of the associations in the province, and we are going to do more in 1895 than in any previous year, because we see the great necessity of these people being educated. Is it not absurd to think that the average farmer is getting only $28 per cow for his dairy products when we have farmers getting $65 per cow, and for less money too? The majority of our farmers are feeding their cows just now for nothing. They are getting no return. Where has the feed gone? Now, you have to get money out of these cows. You have got to have a better class of cows, and have better feed prepared for them, and have a longer milking season, and in this way you are going to get right to the point.

Mr. JACKSON : We have heard a good deal about the class of cows we should keep, but no one has yet told us the proper breed. In this country we have been using the Durham. We have been stock-raising, and if we are to change to something else I should like to know what kind of a cow to keep, because every one has a particular breed which he favors.

The PRESIDENT : If I were furnishing milk to a creamery, and were paid for it according to the butter-fat which it contained—"for the deeds done in the body"—I would get a nice little tidy Jersey, and feed and attend to her just as carefully as to the wife of my bosom, and I would make more money in that way than out of anything else in the world. If I calculated to get no returns, then I would starve and freeze her, and load her full of rye straw—for she can hold a lot of it. (Laughter.) As an ordinary farmer, I would find what I knew to be a good milker, to start with. I would not take a Durham cow, but a cow of the dairy type, and breed from her with a dairy sire, and so work along until I got just exactly what I wanted for my particular use.

Mr. Gould: If I were to start dairying in a new section, and had not a great deal of money, I should try to start very largely with the material on hand. I cannot afford to borrow money to buy a Jersey cow for $200; but I can take judgment, and selecting the best cow of my herd I have a Canadian foundation for a dairy. Now, what will I do? Will I go somewhere and get a "brindle" sire to go with that herd? No, but I will invest some money in buying a sire of a dairy breed, whose ancestors were noted as milkers. Now, raise a dairy calf, and, on the same principle that you took care of and bred the cow deal with the heifer. Do not make a steer of her. (Laughter.) Let us feed her judiciously, making red meat instead of fat, and by-and-bye this course will make milk in the pail. Do not sacrifice your sire the very first year. Retain him for five generations. Now, you will tell me that is "in-breeding." It is not, it is line breeding; it is only intensifying every time the tendency to fight off the characteristic to produce beef. If we have a good calf, a good healthy sire will transmit to her good health as well as good breeding. There will be lots of blanks in your line of breeding, but if we are going to breed from our healthiest, best cows, we are going to make substantial progress with a Canadian cow to breed from. You will have first one-eighth of a pure bred dairy cow, then one-quarter, and so on up to seven-eighths, all predisposed in the direction of making milk and with very little expense. In this way you have a foundation to work up a good strong "working" herd, and when you have got this, stay by it. Then you can say: "I have made substantial progress, and I have done it by the use of my own brains." Then you will feel like running for some office. (Laughter and applause.)

The convention adjourned until 2 o'clock.

SECOND DAY—AFTERNOON SESSION.

On resuming, Mr. Gould gave an address on "Corn Ensilage," which will be found substantially the same in the report of the Eastern Dairymen's Convention elsewhere under these covers. Some discussion ensued.

Mr. Graham: What kind of a cutter do you use?

Mr. Gould: I use the Ross cutter, because it was the only one made 9 years ago, when I built my silo. I think the knife cutter has seen its day, and that the shredder has dispensed with it.

Mr. Rowland: You state that you used 100 lb. of water to a load of ensilage when putting it in your silo. I am surprised to find that ensilage-fed cattle will drink so much as they do.

Mr. Gould: It does not seem to make much difference in what the cow drinks.

Mr. Rowland: There is an acid odor arising from ensilage, and on that account a great many people think it is injurious.

Mr. Gould: I asked Dr. Babcock a few years ago what the chemical change was in the silo, and found that there was a little less than one-half of one per cent. of carbonic acid formed. He said there was just about enough acid in a ton of good ensilage to fizz a glass of soda water. Now, this is only a little step in the matter of digestion. This acid only constitutes about one-twelfth of the acid necessary to be furnished by the cow afterwards for digestion.

The President: What do you mean by a shredder?

Mr. Gould: I simply mean a machine with two rollers. They work diagonally and shred the corn as they go around; instead of cutting it.

A VOICE: Does ensilage take the place of turnips?

Mr. GOULD: It does in this way. It is a succulent food, and the cows will eat more of it. Nine men out of ten will succeed in getting more out of ensilage than out of turnips. For another thing, our butter buyers are getting tremendously critical, and they examine closely, and if they catch a flavor of turnips in your butter they say it is off flavor and will not buy it at all. I am a little shaky about the turnip business just now.

Mr. GRAHAM: What about milling the corn before putting it in the silo?

Mr. GOULD: We used to mill it before putting it in, but now we let it stand ten days longer, risking the frost, and get more feeding value.

Mr. GRAHAM: I have had a good deal of trouble with the cutter breaking down. My ensilage from first to last cost me about 40 cents a ton.

Mr. GOULD: My cutter never broke down but once, and that was this year when we only had four more loads to put into the silo. I think the trouble is that we try to economize on a cutter. We buy a No. 12 when we should have got a number 17.

Mr. GRAHAM. Our trouble has not been with the machine, but with the lifter.

Mr. GOULD: I have found that it pays to get a chain for a machine two or three or four sizes larger than is made for the machine you buy. If you are getting a No 16 machine make them send you a No. 20 link. Tighten it up as much as you can; because when slack it is more apt to break. Put a slide board for the chain to come back on.

Mr. GRAHAM: How do you fix the corners of your silo?

Mr. GOULD: I leave them square. When the ensilage goes bad, I find the fault is more with the man than the corn.

Mr. GRAHAM: Does not the ensilage spoil at the corners?

Mr. GOULD: No sir; not since I stopped treading it down.

Mr. GRAHAM; We have had trouble with the grain running down to the outside.

Mr. GOULD: With the use of the little board of which I spoke the grain would have been distributed.

Mr. ROWLAND: Do the leaves and cobs not settle in places?

Mr. GOULD: Where you will get the most trouble, if you have two silos, will be from the carrier chain carrying your ensilage into the silo you are not filling. The return chain will catch some leaves and carry them over into the other silo. Another thing is that the knives get dull and do not cut all the leaves and they fly about with the chains. That is one reason why I think the shredder will come some day, because with it everything is mangled into condition.

Mr. LEGGATT: Will not the ensilage in the corners of the silo freeze.

Mr. GOULD: We have had it 16° below zero, and did not find any frost in the silo. When you have filled your silo, put some loose boards and straw on top. Then, when there are about 80° of warmth in the pit it will protect itself from frost. Even through Minnesota and Dakota when a man has covered his silo there is no trouble with frost inside.

Mr. GRAHAM: Do you keep the silo level on top when feeding from it?

Mr. GOULD: Yes, sir; I try to. There is a change in the top. If it is very warm weather we use a hand rake in levelling the top.

Mr. GRAHAM: Do you not find that on the immediate top the ensilage is sour?

Mr. GOULD: No, sir; it would be darker, but with that difference there was no change. We have different kinds of corn to deal with of course. Sweet corn is the most destitute of sugars of any we grow. The sugar in sweet corn is in the kernel and not in the stalk. I found with Virginia there were 2,900 lb. of sugar in an acre of corn. Field corn will not keep quite so well as strong, sweet corn. It will take more acid.

Mr. GRAMAM: One variety which I grew seemed to be waxy and sticky, and gummed the machine all up.

Mr. SHUTT: The gums belong to the same class of constituents that the sugars do, *i.e.*, to the carbohydrates. The exact feeding value of gum as compared with sugar has not been definitely ascertained, but it has a feeding value very similar to sugar.

A VOICE: How do turnips compare with ensilage for feeding?

Mr. SHUTT: One hundred pounds of turnips are equal to 50 lb. of good ensilage for the production of milk.

A VOICE: How is it for beef?

Mr. SHUTT: I cannot give you the exact figures.

The PRESIDENT: There is no difference in the world.

Mr. ROWLAND: Would there be any evil influences in natural soil to render water impure?

Mr. SHUTT: The earth is a natural filter, but when we bring in contaminating influences and saturate that soil with decomposing matter, such as liquid manure, then we have altered natural conditions, and instead of the water being purified by percolation it leaches this decomposing matter which the soil contains and gets worse rather than better.

Mr. ROWLAND: Is there any danger of meeting an influence in the soil itself that would injure water?

Mr. SHUTT: The impurities are of an organic nature; not of a mineral nature at all. If there is a layer of clay soil which has above it a layer of sand, the rain falls through the sand until it comes to this impervious stratum of clay, and runs along the top of it until it finds its way into the well. The same with the manure from the barnyard. If your soil is not saturated with such filth, then there is every chance of the water being pure.

Mr. GRAHAM: Did I understand you to say that the feed had an effect on the butter-fat of the milk?

Mr. SHUTT: What I say is that the milk of different cows varies. A cow may give milk with 2½ per cent. of butter-fat or 5½ per cent. That is due to several characteristics. It comes from the breed and the individuality and the period of lactation; and we say finally that the quantity and quality of the feed given to the cow will have an effect upon the milk. It is erroneous to suppose we could feed a cow which gave 2½ per cent. fat in milk, and make her give 5½ per cent. But I maintain this, that if we do not feed her properly we are not keeping her up to her capacity.

Mr. GRAHAM: Some have set up the argument that it does not make any difference whether you feed a cow or not, so far as the richness of the milk is concerned.

Mr. SHUTT: That is erroneous. You cannot take something out of nothing. It is just for that very reason that it has been suggested by the Dominion Dairy Commissioner that we should feed concentrated food in the form of horse-beans and sunflowers. Now, beans are nitrogen collectors. They are plants which contain a very large amount of albuminoids, and therefore by growing beans or clover we have a cheap form of concentrated food. Then, the cow requires a certain amount of fat, and that fat is most cheaply supplied by the seeds of the sunflower. They are exceedingly rich in oil, or fat, and by throwing them into the silo along with the beans we have a convenient means of supplying the two elements—the albuminoids and the fat.

Mr. GRAHAM: Some have said that the quality of the feed did not make any difference in the quality of the milk any more than that it would increase or decrease the flow of milk. For instance, it has been said that whether you fed a cow hay or ground corn it would not make any difference in the production of fat in milk.

Mr. SHUTT: It is quite true that the influence of feeding is first felt in the quantity in milk, and, when you feed a cow up to her limit, an ultimate ration will not affect the quality of butter. If a cow is properly fed with a proper ration she may be brought up to her limit of butter-fat, after which the balance of the food will go into quantity rather than quality of milk.

Mr. GRAHAM: I do not believe just the same as some of our professors do about this point, and I will tell you why. I had been around to these conventions for years, and had been told that it did not make any difference what I fed the cow, she would give the same proportion of fat in her milk. I keep 40 cows and have been experimenting, and I can say that lessons I learned from experience came out different from what we have been told. I found that the food does make a material difference in the fat in the milk, and I did not know whether there was something the matter with my cows or with the professors' theory.

Mr. SHUTT: Of course you are not sure that the cows were up to their limit before you started feeding.

Mr. GRAHAM: I bought a cow specially to do some experiments upon. When I got her she was running in the barnyard, and being fed principally "wind puddings" and "snowballs." She was not in good condition, and was not giving much milk. I took that cow and put her inside and fed her, and her milk increased in fat by 1½ per cent., and that satisfied me. Of course I know, as all do, that there is individual merit. Every herd of cows will vary in rich and poor milk, but still I think there is considerable in the feed as well as the breed, and for that reason I think it would be well to see that the cows are given stables fit for them and sufficient food.

RELATION OF GOOD ROADS TO THE DAIRY.

Mr. Andrew Pattullo, President of the Dairymen's Association of Western Ontario, was accorded a warm reception. Speaking of good roads in connection with cheese-making he said: We make 175,000,000 lb. of cheese in this country annually. That means 17,500,000 cwt. weight of milk. Now, what does the haulage of the milk cost the people of this country? We find that the cost of haulage varies from 3 cents to 17 cents per hundred weight. This simply means that in some instances the haulage of milk costs six times as much as in others. Why is that? I maintain that the chief item in the increased expense is accounted for by the bad roads over which the milk has to be hauled. In some places we have good roads, in others better roads, and in others again, shockingly bad roads. In the early days of dairying, some of you may remember, some of the leading dairymen said that in order to make the business successful in Northern Ontario the first thing they must undertake was the improvement of their roads. I do not know whether the dairymen of those early days went so far as they might in this direction, but in the way of making the highways of our country there is still plenty of room for improvement. I say we find the enormous discrepancy I have mentioned between the factories where the roads are good and where they are bad. I find the average price of hauling milk is 8 cents per cwt. If you could reduce that and make it 5 cents, you would be astonished at the saving. The total amount of haulage according to this figure is $1,400,000. You will see this is a very low estimate when I tell you it only amounts to $560 a year per factory. It actually amounts to double that, I feel sure, at the very lowest.

Now, I don't expect you to make roads in this country as good as they have them in England for a great while yet, if at any time. They have only been making good roads there for 50 or 75 years. However, after a while, when the intelligent people of Canada have a proper knowledge of the importance of this matter, we will have ideal roads in each factory district.

Now, sir, how much would we save if we had these ideal roads? My contention is that even by the present system, and by making such improvements as we could reasonably expect to do in a very few years, we could reduce the cost of haulage by one-third, at least. How much would that amount to? It will make a difference of $400,000 a year. You know if you waste a thing you are throwing it away. Consequently you are at present throwing away that amount of capital. Take this sum capitalized at 4 per cent., you will see that it represents no less than $10,000,000, which is an enormous sum. So you see the question has a very practical relationship to dairymen, and particularly to those who have to haul their milk over roads which are very far from good.

I was speaking on this question at a farmers' institute meeting, and a very intelligent man stood up and said: "The reason for our bad roads is that we have so many cheese factories; they ruin the roads. After all," he said, "it does not cost very much to haul the milk. We only pay 5 cents per hundred." In other words they were getting their milk to that factory below the average, and at a cost which, if all the factories could arrive at, would save the country $400,000 annually. I sai : "Why not have it at 3 cents; you could reduce the cost to 3 cents by making good roads?" A gentleman on the platform said: "We have improved the roads until they are so good that we are having the milk hauled for less than 3 cents." "Now," I said, "how much do you think that saving from 5 cents to 3 cents amounts to?" and I took it on the basis of 160 tons' make a year. How much do you think they have saved at that one factory? $640. That would have been a nice little nest-egg. So you see the importance of this question of road improvement in this country. It is no compliment at all to the dairymen to tell them that they are the most intelligent farmers of the country, because they are in a business which requires intelligence and constant study.

Now, sir, there is not a man in this audience but can see the importance this question has in connection with his interests. Of course you are not situated about here as, for instance, the farmers around Chatham are, where the whole country is practically sealed up to traffic for some months in the year. How do you think this question of bad roads affected them around Chatham? I heard of someone up there who tried to run a cheese factory. What do you think they would have had to pay for haulage? Only 28 cents per hundred. (Laughter.) Of course they could not do it, and cheese-making could not go on. It would have cost them $5,000 or $6,000 a year for haulage. But under ordinary circumstances there is not a district where a factory cannot save $400 or $500 a year by appointing intelligent men to make the roads, and seeing that they do make them.

People say to me, in discussing this question of good roads: "Do you want to revolutionize things? Do you want to abolish statute labor?" I do not know whether I do or not. I am coming to the people of the country to find out. If they are satisfied with the statute labor system, all right. Here is the point: If the system is not producing the results you would like, then the part of wisdom is to improve it in some respects. Now, my own opinion is that you can improve it very much in many directions without sweeping it away. I say that your present system is on the defensive, and you have to prove that under this system you can make your roads better.

Now, where is your statute labor system defective? Is it not in this, that you have many men throughout the country acting as pathmasters who know little or nothing about road making?

My idea of working out this statute labor system is this, that the men who are engaged should be qualified for the work for which they are appointed. If you are going to get a cheese-maker, you do not pick up any man you can find on the streets to make your cheese. You get a man whom you consider to be well qualified to do the work. Why do you not carry out the same system in making good roads?

Another trouble is that when you do get the right men you do not keep them. They are turned out at the end of a year, and other men appointed who perhaps know nothing about road making, and immediately start "summer fallowing" on the good roads their predecessors have made. How do men sometimes do this work? They undertake to put on gravel, dump it in heaps, and do not take the trouble to spread it? Is that not about the system? You know that gravel should not be put on in that way. It is absurd to put stones on the road and expect them to be beaten into the ground. You should have them beaten into pieces before they are put upon the roads.

But people say we cannot change this statute labor system. I will remind you that we have not got the statute labor system pure and simple. You have a combination system. You must remember that you are spending an enormous sum of money outside of what you expend as statute labor. I maintain that the money spent in doing the work through men who have an utter want of knowledge of the subject is worse than squandered, and that such money as you do spend should be put into permanent improvements. You should work to a plan, just the same as you do in connection with making butter and cheese. Make it a rule that the men in charge of road work should be trained carefully, and make your pathmasters work up to a model or plan ; and, having voted money, expect them to expend it with a view to permanent improvement. What is the use of putting gravel or metal on a road that is not properly graded in the first place, and properly drained. After you have spoiled your roads in the spring you pretend to repair the damages. What we want under the statute labor system is constant maintenance. The pathmasters ought to have authority to order men out to work whenever necessary, and ought to keep the roads constantly repaired and smooth.

I have not had time to discuss this question in many of its phases. I may tell you that the more I study it in its various directions the more I see that it affects your interests and directly affects your pockets. I will have accomplished all I came here for if I excite your interest in the subject of good roads in this particular part of the country, and especially as it affects the dairy interests here, and if any of you want information along this line, all you have to do is to give me your names after this meeting, and I will send you all the information which can be supplied by the report of the Good Roads' Association of Ontario. (Applause.)

THE FAT IN MILK.

Prof. Dean was the next speaker and met with a cordial reception. He said : I am not going to talk about the water of milk, or the curd of milk, or any other substance than one. The water is an important part. I understand you have excellent water in this locality. In fact I am told it is so good that the farmers would not think of spoiling it by diluting it with milk. (Laughter.) As I said, we are going to take up just one point—the fat in milk.

Now, there is one great advantage of science in that it is exact. When we speak of butter we speak of something that varies a good deal, and which has some of water, some of fat, some curd, some salt, and sometimes a good many other things which ought not to be there. (Laughter.) Now, the object of the butter-maker is to get the fat out of the milk to make butter. He is after that one particular part of the milk, and his pursuit after the fat represents the pursuit of the young gallant after the opposite sex. (Laughter.) This fat represents a great many changes. We have it first in the soil and air, and then we have it in the plant. Now, the form in which it occurs in the plant, is altogether different from that in which it occurs in the milk, and this is the most mysterious part of it. There is a mystery in connection with this butter-fat question that scientists are forever trying to unravel. The peculiar part of the question is this, that the butter-fat is in another form of combination altogether, and the cow changes it into butter.

Milk is butter-fat diluted with a large quantity of water and a few other substances. Now, we must get that into a concentrated form.

There is, however, one point I wish to speak of before I come directly to the question. I understand you have been discussing whether rich food will make rich milk. From four years' experiments along that line I can say these experiments indicate that rich food will not make rich milk. You say, then, it does not make any difference whether we feed well or not. Yes, it does, as extra feeding makes extra quality of milk, and therefore a larger amount of total fat. The cow herself largely determines the quality of the milk. You say that is a bad doctrine to preach to the farmers. Why not tell them if they feed plenty of rich food they will get richer milk, because that will tend to stimulate them to feed better? I do not think that is right. By-and-bye the farmers are going to find out the truth for themselves, and then they would be more inclined to go back on all the teaching of scientific men. After we had increased a ration of meal to 16 or 17 lb. a day we did not find an increased percentage of fat in the milk.

Some men say if you slop cows it will make them give more milk, but the milk will be poorer in quality. For the last two or three years we have been experimenting in that direction. I wish to call your attention to this chart. In 1893 we took six cows. We fed each of the cows 14 lb. of bran made into a slop. The average per cent. of fat was 4.15. Then we fed wheat and bran—4 lb. of each—and made a cold slop, and the average per cent. of fat was 4.33. We then made a warm slop, and the per cent. of fat was 4.46. The first week there was a drop in the quantity of milk, and it dropped during every period in which the cows were slopped. So we came to the conclusion that slopping cows is an expensive method of feeding.

A prominent dairyman at Guelph claimed that he had been making his cows' yield go up and down like a thermometer. President Mills spoke to me about this dairyman who claimed to get good results from slopping his cows, and suggested that we should make the experiment. I saw the gentleman and said to him : " Do you feed slop in your dairy every day ?" He said : " Well, no ; not every day, but sometimes." I concluded that if he were satisfied his cows gave more milk from feeding slop he would be apt to feed them that way every day.

In 1894 we conducted more experiments. We took eight cows. When they were fed slop once a day the average per cent. of fat was 3 82 and there was a slight gain in quantity of milk—95 lb. in two weeks with the eight cows. When we came to give it twice a day there was a drop again. There is a little thing just there, viz., the change of food to slopping once a day seemed to be a slight benefit. We gave some of these cows all their drink in the form of slop, and when we did that they gave less milk than on dry feed, or slopping once a day. The per cent. of fat remained about the same in all cases. So I came to the conclusion that slopping cows does not pay (and also that it has little effect on the per cent. of fat in the milk), except, perhaps, in the case mentioned—slopping once a day—which gave a change of food and a slight increase of milk. When the cow takes plants and changes them into butter, it is important that we have a cow which is able to change the largest quantity into butter. The cow that will change the largest amount of food into butter is the best cow one can have in a dairy in which butter-making is pursued. What is a good butter cow? One that will give at least 225 lb. of butter-fat, which is equivalent to about 250 lb. of butter. Every cow in our dairy must give 6,000 lb. of milk or 250 lb. of butter a year or we get rid of her.

We have had some interesting figures in the records. We found that in 1894 we had cows which gave about 3,000 lb. of milk a year, and others which gave nearly 9,000 lb. Those that gave 3,000 lb. made a poor return for the expense. Just think of two cows, one fed as much as another—costing as much to keep—and one giving only 3,000 lb. of milk while the other gave 9,000 lb. You see the importance of knowing what the individual cows in our herds are doing. We should find out for ourselves how rich and how poor the milk of each cow is and what they are giving, and then we will recognize the importance of getting a good dairy herd.

Then, how are we to get this butter or fat out of the milk in the most economical form? If we waste it in the skimmed milk or buttermilk we are wasting a large part of our revenue. So then we want to adopt plans or methods of taking the cream out of the milk that will give us the best returns. We have three methods of doing this in Ontario—the shallow pan, the creamer or deep setting, and the separator or centrifugal plan. We made some experiments comparing these methods of creaming in 1894.

We use deep cans in which the milk was set, and the cans surrounded by ice water. To get the results for the experiments we took the milk from one herd and mixed it all together. There is no use putting half of it in one lot and half in another without previous mixing. I have found that some of our cows leave about half the butter in the skimmed milk by the deep-setting process, but when that same milk was run through the cream separator there was very little loss. So that the milk of the herd needs to be well mixed for experiments in creaming. We have been making experiments with the different systems, using one-third of the milk for each system after the milk of the herd had been mixed.

In 1893 the average loss of butter-fat per 1,000 lb. of milk was about ½ a pound of butter. The average for the deep-setting cans was 1.63 lb. of fat per 1,000 lb. of milk, and for the shallow pans 3.26. For 1894 the average loss was 1.32 lb. of fat per 1,000 lb. of milk from the separator, for the deep setting 2.93 and the shallow pans 2.57. You will notice there was a greater loss in 1894 as compared with 1893. The only explanation I would offer is that our dairy herd was composed of different cows. Last year we lost all our cows excepting four, and perhaps the creaming quality of the present herd is not so good. Do you ask what about the separator? You see the loss in 1894 was greater than 1893. Perhaps the work was not so carefully done, though performed by the same man, and we have a very careful man for this work. Then again we used three different kinds of separators instead of one, as in 1893. We found little difference in the closeness of the skimming by the different separators.

When we apply this loss to a creamery we will see what it means. If we take the average loss for the two years from the separator it would be about 1 lb. of butter per 1,000 lb. of milk. If we apply that to a creamery having 500 cows that would mean a loss of 1,500 lb. of butter, which, at 20 cents, would amount to $300. In the deep setting pans we lost 2½ lb. per 1,000 lb. of milk, and if each cow lost 7 lb. and if there were 500 cows' cream, the cost would be $200. Now, take the shallow pans. The average loss would be 3½ lb. of butter per 1,000 lb. of milk, or for each cow about 10 lb. of butter, and the loss on a creamery which has 500 cows would amount to $1,000. That is a very important point, and I think there is room for improved creaming of our milk or getting the fat out of it.

I cannot tell you the best kind of a separator, but if you will come to the Dairy School at Guelph for a course you will see the merits of each. The question of which is the best separator is as difficult to answer as it is to answer the question which is the best breed of cows.

There are a few things we know. In this connection we know what are the differences derived from setting in the deep setting and shallow pans. In connection with some cream-gathered creameries they prohibit setting in shallow pans, and I think that is right because it is difficult in hot weather to get first-class cream from shallow pans. In deep setting cans what is necessary to get the best results? That is a most important point. It is that we must cool the milk down to a temperature of 45° before skimming. If allowed to set in deep cans for twelve hours in ice water, and the milk is cooled down to 45° before skimming we shall get the greater part of the fat out of the milk. I think a great many farmers ignore that point. I know a great many farmers lose one-quarter to one-half their butter-fat by neglecting to cool the milk properly. If you have a cool spring in which to set your milk cans you can get the best results without the use of ice, but if you have not it will pay you to put up ice in the winter to use in cooling the milk in hot weather. In fact, the amount of money you get from your cows at the cream gathered creamery depends largely on how you observe that point. There are people who are always trying to get a high test. What does that mean? That means to have a very rich cream, and that is not the best. Some think when they have 80 or 100 per cent. cream it is too low, and that they are not making so much money with that kind of cream as with cream of 120 to 140 per cent. This is a mistake. Why? You will have more inches of cream, and it is *inches of cream and test together that* determines how much money you are to get out of the cream. Some people get that high test in front of them, and can see nothing but a high test. We want to get inches of cream as well, and it is better to have a cream varying from 80 to 110 than to have a high test all the time, because with a high test you are leaving in many cases a large part of the butter in the skim-milk, and the cream is not so good for churning.

As to shallow pans in winter—because I would not advise using them in hot weather. People who are making butter at home think they must keep the cream around the pantry or near the stove. They think the cream will not rise unless they keep it warm. We have been experimenting for two years, and find the best results from keeping the milk cool.

One word about the care of the cream. Whether the butter is to be obtained from deep or shallow pans, or is to be separated, the cream should be kept cool and sweet until we get enough for a churning, and for cream-gathering creameries until the wagon calls for it. It is the patron's duty to furnish the best cream, and then the duty of the butter-maker is to make it into the very best quality of butter. So patrons should look to this point and keep the cream cool and sweet until the driver calls for it.

Another difficulty is connected with the question of testing. The variation in tests cannot always be explained. In some cases this variation is due to the fact that the same person does not always do the skimming. Another is that drivers are not careful enough in taking samples. There have been instances where farmers had two or three crocks or pails, and the driver took a sample out of but one of these, which was considered a representative sample of the whole. What should be done is to mix the two or three lots together in his can, or, if it is not large enough, then take a sample from each. Another reason is that perhaps the butter-maker is not careful enough in making his test. One creamery man suggested to us, why not make composite samples of cream? We tried this, preserving the samples with bichromate of potash and were not satisfied, and until we do this to our satisfaction I am not prepared to recommend it. If samples were put into a convenient jar each day and tested once a week or once in two weeks it will be a great saving in labor.

I hold that if people will be careful about a few points in churning there will be less trouble. Do not fill the churn too full. Keep watch of the thickness or thinness of the cream. We have found that cream testing 25 to 30 per cent. of fat gives best results and least trouble.

After the maker has bestowed all the labor that it is necessary to make the best butter, he must dress it properly or he will not have the best article for the market. It is important that we dress the butter in the very best style, and if we observe these points we shall have more room in the country for our creameries. (Applause.)

A VOICE: In saying you set your milk in ice water, do you refer to milk in shallow or deep pans?

Prof. DEAN: We do not use ice with shallow pans.

The Same Voice: What would the temperature be?

Prof. DEAN: About 50 to 60 degrees.

Prof. J. W. Robertson, Dairy Commissioner for the Dominion Government, then delivered an address entitled "The Creamery outlook of Canada." The manuscript of the address and the discussion thereon has been forwarded to Prof. Robertson at Ottawa. If it is returned in time, it will appear in an appendix to this report.

THE ASSOCIATION BANQUETED.

In the evening the visitors were right royally entertained by the enterprising and hospitable villagers of Chesley at a banquet, held in the McDonald House. In the neighborhood of one hundred guests were seated at the festive board, the tasteful arrangement of which, as well as the excellent bill of fare, did ample credit to the ability of mine host Schohn and his good lady as caterers.

The chair was occupied by the Reeve, J. H. Elliott, and the vice-chairs by Messrs. A. S. Goodeve, C. J. Mickle and Dr. Bonnar.

The toast list drew forth happy and interesting speeches from Mr. John Gould, Ohio, in response to "Our Neighbors;" President Derbyshire, in response to "The Ontario Creameries Association;" President Pattullo and Secretary Wheaton, of the Western Dairymen's Association, in response to "The Sister Associations;" Professor Robertson, Dominion Dairy Commissioner, in response to "The Dairying Service;' Professor Dean, to "Our Dairy Schools;" Mark Sprague, the Association's Instructor, and Professor Shutt, in response to "Agricultural Education."

THIRD DAY—MORNING SESSION.

THURSDAY, January 10.

Mr. J. W. WHEATON, Secretary of the Western Dairymen's Association, was introduced, on the convention resuming, and read the following paper:

THE RELATION OF BACTERIOLOGY TO MILK AND ITS PRODUCTS.

Bacteriology, though comparatively new, is an important branch of science. It is the science that treats of the natural history of those minute micro-organisms known under the general term of bacteria, and which are now known to be the chief factors in producing many of the effects in the physical and mechanical world which were formerly unexplained. So common are they, that no atmosphere is free from them, no portion of organic matter is without their company. The soil is inhabited by them. Every stagnant pool, every heap of rubbish or decayed matter, and every place where filth has accumulated, are kind of reservoirs where are stored up, and where are propagated countless millions of these minute creatures. They are so small that only by careful examination under some powerful microscope can they be seen. They have a variety of structure and form, and reproduce themselves very rapidly. With suitable food, and other conditions favorable, these minute forms of life will multiply themselves many millions of times in a few hours.

The essential food elements necessary to their existence are nitrogen, carbon and oxygen, together with minute particles of the organic salts. The variety of food upon which they will thrive is about as great as the variety of forms among these micro-organisms. These foods are better adapted for their use when in the form of organic compounds, such as milk, fresh meat, and such substances as are liable to decay easily. Their growth is affected very much by temperature. Each species has a minimum and maximum point, below which it ceases to grow, and above which its life is destroyed. Therefore we will find species which thrive best at a comparatively high temperature, while there are others which grow better at a low temperature. As a rule, extreme heat or extreme cold will put an end to their existence or prevent their further development. With a large number of forms, free atmosphere is necessary to get the supply of oxygen. Such bacteria are called *ærobic*. There are also a large number towards which oxygen acts as a direct poison. These are known as *anærobic*. The larger number of the milk bacteria belong to the former class, but there is also a large number of the latter found in milk.

Some of these minute organisms reproduce themselves by simple division of the cell, while others form what are called "spores." The former are easily destroyed by heat. For the majority of them a temperature of from 130° to 140° F. is fatal. The spore-bearing forms are not so easily destroyed, and sometimes require a temperature of from 230° to 240° F. kept up for some time, to destroy the life germ in the spores.

Milk is a very suitable medium for the growth of a large number of these minute micro-organisms. The proteid or casein is the most important constituent of the milk for germ development. It is valuable for this purpose because of its nitrogenous nature. The butter-fat, though important from a commercial point of view, is not of any great value as a food for bacteria. Its condition in the serum of the milk in the form of minute globules, and the peculiar combination of elements by which it is produced, afford no room for germ development. The sugar of milk is very suitable for bacterial growth, especially for those forms which bring about fermentation changes, such as lactic acid. The inorganic elements, or the mineral salts in milk, though in small quantities, are essential to the growth of the germ life.

The milk in the cow is secreted in the milk glands and flows from these into channels leading into four receptacles with which the udder is provided. The milk when formed in the milk glands of a healthy cow is free from germs. If it could be taken directly from the gland itself it would be entirely free from bacterial life, and would remain sweet indefinitely if kept absolutely free from the atmosphere. As the atmosphere is full of germ life, these micro-organisms get into the milk ducts opening to the outside where the temperature of the animal is suitable for their growth. Consequently, the first part of the milking will always contain a large number of bacteria, while the last of the milking will be nearly free from them when taken from the cow. Even if they are not in the milk when taken from the cow, so quickly do they get into it and reproduce themselves that as many as from 60,000 to 100,000 have been found in one cubic centimetre of milk (about $\frac{1}{5}$ of a cubic inch) a minute or two after it has been taken from the cow. In cows' milk six hours old there are estimated to be from 2,000,000 to 6,000,000 bacteria per cubic centimetre.

Bacteriology has therefore a very important relation to dairying, and the dairyman who would become proficient in his calling must understand to a greater or lesser degree the life history and the habits of these minute creatures, and the effect they have upon milk and its products. He will not be able himself to find out very much relating to bacteria as they can only be studied by skilled scientists who have well equipped laboratories at their disposal. But the dairyman must learn form those who are able to investigate and endeavor to apply this knowledge to his own branch of the business. He must find out the conditions favorable to the development of bacterial growth, and endeavor to counteract and control those forms which have an injurious effect upon the milk. As has been shown it is impossible to prevent these minute creatures from getting into the milk. They are so universal that it is not possible to find a place where they are not more or less numerous. There are some kinds which have a deteriorating effect upon the milk, and others which, if properly controlled, have a beneficial effect and are necessary for the dairyman to have. The dairyman can control in a very large measure the number and the kind which get into milk, and if he is going to be successful and turn out the finest product he will have to give attention to this branch of the work.

Cleanliness is a kind of antidote for all kinds of bacterial life, and should be scrupulously observed by the dairyman. Filthy, badly ventilated, and badly drained stables are good conditions for bacterial growth and especially those which will communicate bad flavors to the milk. Hence the necessity for milking in clean stables and in a pure atmosphere. The person doing the milking is liable to have a number of bacteria about his clothes. These will contamimate the milk if the milker is careless about brushing his clothes over it. The udder and teats of the cow are good places for germ development, especially if they are in a filthy condition. Both should be brushed or washed before milking. Attention to these little things will lessen the number getting into the milk. The milking utensils should be kept absolutely clean. This is a condition the dairyman has under his absolute control. Every vessel can be sterilized by boiling water before the milking begins. Unclean tinware or milk-cans with a scum or filthy accumulation along the seams or joints are just the things the minute creatures delight in. They will grow and reproduce themselves very rapidly in such crevices, and live on in ease and plenty, ready to transplant their stock in other quarters as soon as the opportunity arrives. One of their rare opportunities is to have the warm milk drawn from the cow upon them. Then their "picnic" begins, and they go on a journey of investigation through every particle of the milk and take the whole family along as well. The practice of carrying the waste products, such as sour skim-milk and sour whey in the same cans that the milk has been carried in, will contaminate the milk with the germs which are in these bye-products, unless the cans are properly sterilized before the milk is put in. Milk should not be left standing around or in the stables after milking as it will quickly become filled with the germ-life in the stable. Bacteria are always in the atmosphere. In a pure atmosphere the kinds usually found are not injurious to the milk. In an impure or tainted atmosphere are found the kinds which injure the milk. In fact these taints or impurities in the air are caused by these injurious forms. Therefore milk should be kept where the air is pure We have spoken of some forms of bacteria which require oxygen in order to grow and of those toward which oxygen acts as a poison. Though it cannot be taken as a general rule, yet a large number of the bitter and bad flavors in milk are caused by the latter class. Hence by stirring and airing milk, and allowing the pure oxygen of the atmosphere to pass through it, those forms which do not thrive in the presence of oxygen will be largely destroyed.

As to the various kinds of bacteria which thrive in milk and the effects they produce, we cannot here devote much time. A large number are known to thrive in milk, producing various effects. The life history of many of these is not well known. The most common is the one causing the souring of milk. The principal germ in this connection is called the *bacillus acidi lactici*. It works in the sugar of milk changing it into lactic acid, which gives milk its sour taste. When there is a sufficient amount of lactic acid formed the casein will be affected and begin to curdle in the milk. Where milk is very sour the lactic germ will stop growing. It is not destroyed, however, and when put into a suitable meduim will begin to grow. The lactic germ begins to grow at 50° F. and continues till a temperature of 140° is reached. Therefore if you keep milk below 50° or above 140° it will not sour very quickly. The lactic germs are valuable adjuncts to the work of the dairyman when kept under control as it is necessary to have a certain amount of lactic acid in butter or cheese-making.

There are forms which cause the rennet or peptonizing fermentations in milk, producing thick milk which is not sour. These are not well known. They are supposed to have something to do with curing cheese by breaking the casein down into soluble compounds. Then there are the forms which produce butyric acid fermentations, bitter fermentations, slimy fermentations, alcoholic fermentations, soapy milk, red milk, blue milk, etc. The forms producing bitter milk and some of those other effects usually form spores which are difficult to destroy by boiling or sterilizing. Therefore it is often found that bitterness will develop in boiled milk, after it has set a long time. This is due to the resisting powers of these endospores. These spore-bearing forms will stand great drouth, and consequently are very difficult to get rid of. The forms causing alcoholic fermentations are not the true bacteria, but are more like the yeast ferments.

Bitter milk, slimy milk, etc., are not always due to bacterial growth. Sometimes cows far advanced in lactation will give bitter milk. Bitter herbs taken as food will cause it. Slimy milk may sometimes be caused by inflammation of the udder and errors in feeding, etc. As a rule, however, these things are due to bacterial growth. Taints caused by bacteria become more distinct as the milk becomes older; while those due to the feed are more distinct when the milk is taken from the cow.

Milk absorbs and gives off gaseous impurities with ease. When the milk is warmer than the surrounding atmosphere it will give off the odors peculiar to it, but when cooler than the atmosphere it will absorb the odors around it. Therefore a taint in milk can always be more easily detected when the milk is heated Sulphur burned in the presence of moisture, chloride of lime, corrosive sublimate and freshly burned quicklime, are good disinfectants to use in purifying places with foul odors or stenches. Vitriol salts are good to use in gutters, drains and wastepipes of factories.

There are two methods of preserving milk from the effects of this bacterial life: By preventing the germs from getting into the milk or by destroying them after they are in it. The former is impracticable, as it is impossible under ordinary conditions to prevent these microbes from coming in contact with the milk. For destroying the germ life in the milk chemicals may be used. But these may injure the flavor of the milk. These germs may be taken out of some substances by filtration, but this is not applicable to milk. The most practical method is to take advantage of the effect that an extremely high or an extremely low temperature will have upon the bacterial life. The cooling of milk down to within a few degrees of the freezing will check the germ life and enable the milk to be preserved for a long time. Very high temperatures, however, are better, as they are more practicable for the average dairyman.

The two methods used in heating milk are called *pasteurization* and *sterilization*, the former named after Pasteur, a noted French scientist. These two terms are often used indiscriminately by many as meaning the same thing. They are different, however. Pasteurizing is heating milk to a temperature of from 135° to 160° F., while to sterilize milk it must be heated to the boiling point, or from 212° to 220° F. The latter process will destroy the larger number of germs, but will change somewhat the normal condition of the milk, and therefore is not suitable for dairy purposes. Pasteurizing is more practical, and will destroy a large number of germs, and check the further growth of a number more. It is in use in many large dairies in the United States, and can be operated without much difficulty. There are several machines made for the purpose. To perform the work effectively a machine must be so constructed as to heat the milk evenly and thoroughly, and should have attached to it—if desirable to preserve the milk for a long time—some arrangement for cooling the milk to a low temperature very quickly. Unless the milk is cooled very quickly after being pasteurized it will soon lose heat enough, and cool to a temperature at which the bacterial life not destroyed will begin to grow again very rapidly. For this reason the heating of the skim-milk or whey at factories to 130° or 140° will not have a very beneficial effect in preserving the milk for any great length of time. By paying more attention to cleanliness in connection with he tanks more good will result. The usual plan for constructing pasteurizing machines is to have the milk pass over a heated surface, where it is heated to the proper temperature for a sufficient time, and then passed through a cooling apparatus. Another plan is to have a tank surrounded by a hollow space in which is hot water or steam. It will be some time before *pasteurization* of milk before using will become practicable in our cheese factories. It may, however, be utilized to advantage in our creameries in preparing the cream for a pure "starter."

Cream, from having a very large percentage of butter-fat, might be considered as not being a good food medium for germ life. But there is always a larger percentage of microbes in cream than in the skim milk from which it is separated. This is largely due to mechanical causes. In the gravitation method of skimming by a process of filtration the bacteria are gathered on the top along with the cream. By the centrifugal plan there is always a large number of bacteria in the slime thrown to the outside of the separator bowl, and a much larger proportion in the cream than in the skim-milk. There will not be so many fermentations develop in the cream afterwards as in the skim milk, because it is not so good a food medium. Therefore cream will sour quicker when left in the milk than when it is separated at once. To use a separator in extracting cream will therefore be an advantage.

Skim milk, though usually containing a smaller percentage of bacteria than the cream when separated, is a better food medium for their growth, and unless properly looked after will have become filled with germ life. Buttermilk is always a good medium for bacterial growth, and usually contains a large number of them, due mostly to its age.

There are other phases of this subject which might be discussed with profit in connection with cheese-making and other branches of dairying, but we have already transgressed long enough upon the time of this convention. Enough has been said, however, to show the important relation that bacteriology bears to milk and its products. It will be seen that a large share of every dairyman's time must be devoted to counteracting the bad effects which injurious forms of germ life have upon the quality of the milk, and to promoting the growth of those forms which will have a good effect, and are necessary in order to convert milk into some of its valuable products.

So important is this subject that much benefit would result to the dairy interests of Canada if some of our experimental stations would take up some investigation along this line. Moneys expended in laboratories, and for a competent staff to study the various relations of these micro-organisms to the work of the cheese and butter-maker, would result in much practical good towards improving the quality of our dairy products.

Mr. CROIL: I would like to ask Mr. Wheaton how he accounts for there being more acid in the cream than in the skimmed milk?

Mr. WHEATON: It is supposed to be due to chemical causes. These particles would rise to the top the same as the fat globules. In the separator system I think it is due to the same cause. I think it is not so heavy as the other part of the milk and is thrown out with the butter.

Mr. CROIL: Why would there be more in the slime?

Mr. WHEATON: It might be due to this, that the particles might be more in contact with it and not able to separate themselves, the same as Prof. Robertson's illustration of the paper held in suspension.

Mr. ELLIOTT: Is the cream not apt to be churned when brought over rough roads to the creameries?

Mr. WHEATON: I think, perhaps, it would be, though I have not had much experience along that line. If the roads were very rough it would be apt to churn the cream and not be in good condition when it arrived at the factory. I am of opinion that where the factories are far apart, and the roads bad, there should be a central dairy station.

Mr. CROIL: The question was brought up last night whether the feeding quality of the skimmed milk was injured by being a little sour. We have understood that it was better; that it immediately turned the sugar into lactic acid.

Mr. WHEATON: I do not think the quality of the food is affected, but the quantity is. If you change that sugar into lactic acid you lessen the amount of food in the milk.

Mr. CROIL: I understand that the milk has to be soured before it becomes digestible. If that is the case, I do not see why we should go to the trouble of heating this milk and whey to return it to the patrons sweet.

Mr. WHEATON: I think there is a benefit in preserving it sweet.

Mr. CROIL: You say there are certain bacteria that are not injurious to the milk, and others that are injurious. Does it injure the milk at all to have the first mentioned bacteria present?

Mr. WHEATON: It will if you let them get beyond your control. Take the lactic acid, for instance, caused by bacteria, you do not like to have too much of this, but you like to have the cream at a certain condition of ripeness for churning.

Prof. J. W. Robertson, Dairy Commissioner for the Dominion Government, then delivered an address entitled "Making of Butter." The manuscript of the address and the discussion thereon has been forwarded to Prof. Robertson at Ottawa. If it is returned in time it will appear in an Appendix.

THIRD DAY—AFTERNOON SESSION.

The Convention resumed at 2 o'clock.

ELECTION OF OFFICERS.

Mr. R. J. Graham presented the report of the Nomination Committee, the adoption of which he also moved, seconded by Mr. J. H. Elliot, Reeve of Chesley. The motion was carried unanimously. (For the list of officers see page 152)

The President, in a few timely words, thanked the Association for the honor once more paid him by his re-election.

THE QUESTION OF GOVERNMENTAL ENCOURAGEMENT.

Wm. BELL, Chesley, was invited to address the Convention and said:—I do not know for what purpose I am asked here, but it is the custom in the export trade that where ocean freight is regulated in a big way—where there are "stowage" and "tonnage" or "stuffage" mixed in a cargo—it goes through at a much lower rate. According to my mind, when your President asks me to get up here and speak he expects a speech that partakes of the nature of "stuffage" (Laughter). Well, this is not very comforting to me, but these men are so good natured—they have come here in such a friendly manner—that we can scarcely refuse them anything they ask.

I am not a butter man. I am interested in butter because I eat a good deal of it, and I am certainly interested in whatever affects the farming community of this country.

We are all interested in that, and I may say that what I have heard here has increased my interest, and, not only that, but increased my respect for this Creamery Association to such an extent that I have given practical effect to my interest by becoming a member I cannot help but say that there are certain things that have been put into my mind by the observations of the gentlemen who have spoken. I had not the pleasure of hearing them all, but I did hear a few, and they put this thought into my mind. I think wherever there are honest, rational minds at work the interest increases. I have often vaguely talked about butter-making, but I never felt interested in it until I heard Mr. Gould, from Ohio, who, I must say, awakened my interest in the subject. I noticed this much, that he went at the matter determined to find the bottom of it, and I know if we are ever to do anything we must get at all the roots, and examine it from the standpoint of clear intellectual power. He impressed me that he went at it the right way. He spoke of the man to make the butter, the cow to use, the way to treat her, and the only thing that I thought he left out was the kind of stomach in the man who was going to eat the butter we were going to make. (Laughter). If we had an analysis of the Englishman's stomach perhaps it would help us. I know the Englishman has a palate of his own. I happened to be in the neighborhood of Glasgow in pursuit of my business two years ago, and I noticed at one man's place they had received a consignment of butter from Australia and was told that it came from there. I noticed that both English and Scotch liked a "fresh" article, and I know that in this country a good many of them require a "fresh" made article. We who live here are further away from the ocean than they are there, which may account for their relish in this direction. Perhaps there is a point here which you gentlemen who are after the market of Great Britain may make use of.

I was interested in the discussion along the line of political economy, and I was very much pleased with the remarks of Prof. Robertson and other gentlemen. There is something that interests me here with regard to our own people. I am a merchant myself in timber, but I am distinctly desirous of doing all that I possibly can to help the farmers of this community. I have a great sympathy with them. Some one has said here that this was a distinctly agricultural country. I have always held that our Government and the government of the United States have practically done what I think (many of you may differ) an injustice to the farmer. I think they have said to the young men: "Go away and leave the farm; go into the town, and we will assist you in the town; we will give you advantages; we do not think the country is of very much consequence." We have done this for one thing by building up the manufacturers. I may be right, or I may be wrong, as to the ultimate effect of this policy, but I know that a great exodus of young men has taken place from our farms—that the went away from the farms and crowded into the cities, and that the reason was they could not get employment on the farms. I observe, and am thankful for it, that this Association comes among us proposing principles by which our farmers can be benefited, and they are reasonable and logical to my mind. They propose to do something to enable us to make our farms of more value; to enable our young men to labor and work here and provide for themselves at home. They propose to place you on something of a par with the merchant and manufacturer. The merchant and manufacturer, from my point of view, have had things pretty much their own way. The farmer, to my mind, has been obliged to take what he got, without any reference almost to what he should take. There was a thought along this line mooted this morning. My opinions are rather against protection—with all due respect to my friends who desire to build up the country in that way—but when it was proposed this morning to give a bonus to the agriculturists it occurred to me that this was the proposition: supposing the present Government is sustained and the policy of protection goes on, I want to see the farmer get some advantage from it. As I understand it, the idea of protection, in the first place, was that I, say as a farmer, should pay a little more in the way of taxes to build up other industries and enable you to sell your plows and harrows, and so on, to our consumers. You are not to burden us completely, but only so that we will pay a little higher price for your articles. Then in this way you will build up our towns and we will have the home market, and finally the competition within the country will so bring down the prices that we will have the advantage of internal competition, with the prices as low as they originally were under free trade. If this theory be continued—if I cannot see my views tried in the country—then I want perfect fair play carried out. If the farmers have to purchase at a higher price, and by protection you cannot increase the price of what they have to sell, then it follows that they have a perfect claim to a bonus on their articles in order to even them up. The farmer has heretofore not received any bonus in this way, and has a claim on the Government to assist him to increase the price of his article. I am only speaking from the principle of protection. My own view is that we do not want any such thing at all; but if I cannot get one thing I will assist the farmers with all my power to get fair play in another direction, and urge that when the Government find you engaged in making butter, and moving in a single direction, they shall use their power to open the way for you and not use their influence to dam it up. My opinion is that trade is like life in that it is full of instinct; that it has a distinct instinct to make for the best market it can find, and that a government's interference should be in the way of opening the channels in which they find trade to be moving. I hope I am not discussing politics any more than the question is fairly in line with the farming interest. All I can say on this subject is in the way of laying down general principles. I cannot go down to details, and it would be too bad if I should, by taking up your time longer, interfere with the imparting of any real knowledge about dairying which the speakers can give you. I am glad to be here to express my sympathy with the Creameries' Association, and I feel sure that they have come here to benefit us and promote what we all desire —the general uplifting of the farmer. If you keep his nose to the grindstone 16 hours out of the 24 in order to make a bare living for his family, he will not give you the best return. You will not make the best kind of men by starving the farmers. First make the groundwork for success before building the superstructure, and in this way promote a kindliness of thought and feeling—all pulling together for the elevation of the people—until the day will come when

"Men to men the warld o'er
Shall brithers be for a' that."

Prof. J. W. Robertson, Dairy Commissioner for the Dominion Government, then delivered an address entitled "How to Feed a Cow." The manuscript of the address and the discussion thereon has been forwarded to Prof. Robertson at Ottawa. If it is returned in time it will appear in an Appendix.

CLOSING PROCEEDINGS.

Mr. John Gould was asked to say a few words by way of farewell to the convention. He said: I once went to a party of quite distinguished people. After spending the evening, the guests began dropping out one by one, and finally my wife and myself began to make preparations to go too; but my host said, "I want you to stay, I think you can taper off this gathering better than anybody else." Now, Mr. President, you ask me to give the round-up of this convention, the proceedings of which I hope you will all read *verbatim*, because they are crowded full of good things To me it has been one of the most profitable meetings—barring what I said myself—that I have attended in Canada. Like an egg, it has been full of meat. I want to say before I go away that I hope we shall take what we have heard to ourselves, and see if we cannot profit by it. Now, men profit in two ways. We have in our part of the country a Mr. Febinger. He went to a farmers' institute meeting and heard about the value of well bred stock—that a man who had not thoroughbred stock would never succeed in the world. He went home and reckoned up his shekels, and bought the prettiest red Shorthorn heifer he could find. He took her to the show, where he thought the judges and everyone else were bound to hunt for her. He put her in the stable, and never moved her, and did not tell anything about her. After the show he started for the gate. A friend met him, and said, "Febinger, are you going home?" "Yaw," he said, "home's the best place for this man." "Did you not get a premium?" asked his friend. Febinger answered not a word, but only gave a shake of the head. So when a man has the best herd in the ring, if he does not show them to advantage he gets no premium. We have to do more than stand still, and let somebody else come around to find out the good points. We have to show the merits of what we have and call attention to our country, and in this way make of it a greater farming country. After we start out right we have to adopt the improved opinions of our dairymen.

Another thing we want to enquire into, is what this meeting has amounted to for us. Has there been anything said that you and I can be benefited by? Or are you just going to say "this was a good meeting, but I do not think there was anything about it of practical value to me." Like the fellow who sold some sheep after walking 25 miles, when asked what he got out of it, said he did not get anything but the walk. (Laughter.) We have got to do a little more than talk with our neighbors about their stock. We have to select some things that we think will benefit us, and improve on what we get. Get something this year and then next year get something else, and in this way I think you will do a good, honest, sound business all the time.

I think another thing that would benefit the farmers would be to have a local farmers' club. Let those who are running factories say, "we are going to have a little neighborhood patron gathering down at our factory." Now, come down and bring Jane with you, and when you come have something fixed up in relation to your business, which you can read to us. Don't grumble that the bottom is knocked out of agriculture, and that business is no good, and "I wish I was well out of it, and I shall never bring my boy up to it, and I shall marry my girl to someone else than a farmer." It will knock the bottom out of farming if you mistrust that it is a good business. Whenever you stand on something ready to go down hill, everything is greased for the occasion to help you to slide. Agriculture is one of the best businesses on the earth, and 90 out of 100 men in business fail, when only one farmer in 100 does, and if you are not successful all the same you can very well make yourselves believe that you are. Did you ever go to a Methodist class meeting and see a number of people who were all frozen, religiously speaking? The minister had said his best things. Then Brother Jones got up and lamented his failures, and pointed out where he ought to have had a "yanking," but by-and-bye the more he talked on the more he began to talk of how he led a better Christian life, and some deacon down in the corner said "Amen," and then the ice was broken. There always will be occasions when men's faces are towards the kingdom, and the meeting gradually grew warmer, and the members called out "Hallelujah" and "Amen," and then there was more testimony, and the result was that in the end they were the best lot of Christians you could find. Why? Because each man and woman present had lived, with God's help, so that they were good Christians, and when they got through there was not one of them but was sure he was heavenward bound. Please say at your club, "I have come here this evening to see whether I cannot talk with Jones and Smith and Robinson about business—to see if we cannot make an improvement here and there," and when you have discussed it all you will think, "We are a pretty good class of citizens after all." Then, in two weeks, meet at someone else's house. Let us go another step. There is some girl who is a good reader. Let her get up and read an article prepared by herself and her father. It may be only about how Smith starved his cow, but that does not matter; you have got your text, and before you go away from that meeting you will think, "I will take care how I feed my cow." The third week let the women talk chickens a little bit, and then they can ask their husbands, "Who gets the pay for the hens' eggs?" And out of these meetings we shall have progressive students all the time, until the next farmers' institute or creamery convention, when we can begin to talk; and when Prof. Robertson comes, you may anticipate pretty well something of what he is going to say, and perhaps suggest something better.

One word about Chesley. I like Chesley first-rate. When advised to come to Chesley I supposed it must be somewhere near Mr. Derbyshire's town, and so tried to find it along the St. Lawrence, but failed. I wrote to ask him where it was, but did not get word for six weeks, and then found he had been looking for Chesley himself.

(Laughter.) Now I know where Chesley is, and I like your town, and if I stay here until Monday I do not know whether Mrs. Gould will ever hear from me again. I am somewhat like the old lady who belonged to a church in a western town, where they got a new parson from a place called Jamestown, and he was everlastingly speaking about the virtues of that place. This old lady had been 70 years on the road heavenwards. She had faith most of the time, but sometimes things did not seem quite so bright to her and she was downcast. At length, however, she consoled herself by saying that if she had faith till the end, even if she failed to reach heaven, she might at all events get as far as Jamestown. (Laughter.) So if Lake Erie looks too dark and forbidding when I get that far on my way homewards, I shall thank the Lord that I can come back as far as Chesley, and be among my friends. (Applause.)

Reeve J. H. Elliott said: I have very much pleasure in moving a vote of thanks to the Ontario Creamery Association for coming to Chesley. I think this section of country will ever be indebted to Mr. Wm. Halliday for getting the Association to come here and that they have conferred a boon on this country by their practical discussions. The farmers, I think, have not been farming in the way they should. I have been studying the agricultural question in this country all along, and I think education induces the boys and girls to leave the farms and flock into the towns. They are sent to school until they reach the age of 20, and never learn to work at all, and then they will not work. These boys are in my opinion not naturally workers, and I claim there is more necessity for them to learn to work on the farm than to get an education. I feel that this Association is trying to put the farmers on the right track, and into a position to have a good object to live on the farm. This is an agricultural country. Everything we have to depend on has to come from the farm, and agriculture should be the first and foremost consideration of all others. Already the professions are overcrowded. I have seen boys walking these streets looking for a job at clerking, and felt like saying, "throw off your coats and go to work in the fields." I feel that farming is a nicer occupation than standing behind a counter. There is nothing better in the winter than working in the stables and feeding cattle, and I hope the farmers will take the advice which has been given here, and pick up all those things that have been suggested and profit by them. I have been delighted with the addresses of Prof. Robertson and Mr. Gould and other men we have had here, and had no idea the Association was going to give us anything like the information they have.

Mr. Dalgarno: I rise for the purpose of seconding the motion. It has given me great satisfaction to see the women out at these meetings. Let it be remembered that they in this instance are like the wife of the Scotch couple who got into a dispute. He said: "I am the head of the house;" but she said: "I am the neck, and it is the neck that turns the head." (Laughter.) Now, we have all certainly been benefited. Our worthy President, Mr. Gould, and Prof. Robertson and the others have spoken in a way to make us a little more thoughtful about our work. Then, we are certainly indebted to the efforts of our Director, Mr. Halliday, for having this meeting held in Chesley, and, while remembering others in a vote of thanks, he should not be forgotten. Then, these men have come prepared. They have been studying this question beforehand, and we have all received the benefit of the thought they have given to the matter.

The President: You have no idea the pleasure it gives us to hear such expressions from you with regard to our feeble efforts. Prof. Robertson is known from the Atlantic to the Pacific, and it is no easy matter to get a man like him to come into our midst and give an address such as he has given us this afternoon, which it has taken months to prepare. There is no man equal to him on this subject in the Dominion, nor do I believe on this North American continent. When I hear him it makes me feel proud that I am a Canadian. I can tell you that we are also thankful that we have such a man as Prof. Dean. Then we have Mr. Pattullo, and the dairymen of western Ontario recognize him as a publisher doing much good work in their behalf, and without a dissenting voice have put him in the position of their President. Then, we have Mr. John Gould. Now, if you were to go down and look at John you would not hire him to come to Chesley, but I will tell you why we hired that man. We hired him and brought him here not only because he had made more money out of his cows than any individual in his part of the country, but because he had the power to convey to you a knowledge of what he had done and how he had done it Of the other speakers, we have had here Prof. Shutt who is engaged at Ottawa. Why? He is hired by the Department of Agriculture because he is the best man for the place he is occupying the Government could find. We brought him here because we knew he was a practical man in his own work, and had the ability to give you the best information along his line of work. I feel proud of this man, Mr. Halliday, whom you have elected and sent to the council. I feel proud of Chesley because you have so nicely entertained us, and opened your homes to our guests and provided this hall for our meetings and in all respects treated this Association as it has never been treated in any other part of the country; and now I say that if we can all just go home and take some of these matters we have received information upon here with us and consider them carefully and put them into daily practice it will do us a great deal of good. At one of our factories we have every year an annual meeting, where the business of the year is summed up. We have on the blackboard in columns a statement where everybody can see the name and number of cows of each patron, the number of pounds of milk he has furnished to the creamery, the price per cow he received and how much milk per cow he got. You know what that is done for. The reason they put these things down is to brighten up these people and cause them to find out how one man got $65 per cow, and on less than 100 acres of land sent $1,300 worth of butter to the creamery. You at once see that this man is keeping cows because it is profitable and because at the same time he is enriching his soil, so that next year he can grow better crops than he did this year. By selection he is weeding out his poorer cows and adding better ones, and in every way making his home happy and the country better for his existence. Another one gets $14 per cow. That man does not like the Dominion Parliament, and hates the Creamery Association, and has a strong detestation for the dairymen's associations. He hates everybody, because he is not willing to drop right into the Association and make money by adopting good advice. He grows pussy grass, thinking to grow wheat, and starves himself and his family. He will not educate himself or his children, and the boys try to get into something else than farming or go to work for a neighbor. He thinks the country is all wrong and that it is the Government's fault. Now, when you see the man who is making $65 per cow come into town do you think he is finding fault with anybody? No. That man is truly a Canadian. Now, what we want you to do is, if you do not believe what Mr. Gould has told you—that the cow ought to be kept comfortable and fed properly—if you have ten cows put five of them in a warm stable, with summer conditions in winter, feed ensilage corn, salt every day and watch the results; and turn the other five out till the poor creatures freeze, and see which of them will do the best and make the most money. If you find the most profitable five have been kept indoors, why not adopt what Mr. Gould tells you? Put into daily use the things you have learned. In conclusion I want to say once more that we have been well used in Chesley, and all the people have turned out and listened wonderfully. Just think that we have people who sat listening to addresses attentively for five hours yesterday, when we nowadays limit our preachers of the gospel to 45 minutes by the clock! Another thing is that you have given us a large list of members.

I respect the old men who have done the pioneer work of this country, on account of the genuine service they have given us as Canadians, but more is expected of us. We are expected to make better butter and finer cheese and the finest products in every line we take a hand in, and in order to do this we must take advantage of such gatherings as these, and read about and study our business thoroughly.

VOTE OF THANKS.

Moved by T. J. Millar, seconded by John H. Croil, "That the thanks of this Association be tendered to the citizens of Chesley, the different railway corporations and the local press for their kindness and attention, and also to the *Globe*, *Mail* and *Empire* for the full reports they have given of the meetings." Carried.

This concluded the business and the convention closed.

DIRECTORS' MEETING.

At a subsequent meeting of directors, Cornwall was chosen as the place of meeting for the next convention, to be held in January, 1896.

The directors also received the report of Mr. Mark Sprague, the Instructor and Inspector, as he did not arrive in time to present it at the convention :

REPORT OF INSTRUCTOR AND INSPECTOR.

Mr. President and Gentlemen: It affords me pleasure to present to this convention my report for the season just ended. This has been a very busy season. Perhaps there may not again be a season in which there will be so much work for your instructor. Many valuable lessons have been taught to creamery men, especially those who have engaged butter-makers without sufficient experience in handling and operating the different kinds of machinery needed in the manufacture of creamery butter. It would no doubt repay any one starting a creamery to insist on the butter-maker bearing a recommendation from his former employer, or from those with whom he served his apprenticeship, as to his ability to handle the various separators in use. And always remember that a butter-maker who will work cheaply is often the dearer man before the season is ended. Never try to keep down expenses by way of the butter-maker's salary.

We had a large increase in the number of creameries, both winter and summer, as the rPesident has already shown you in his very able opening address, and the demand for experienced and competent operators seemed limited. As a consequence the instructor's services were in good demand. There no doubt has been some fault found by the older creameries that they have to a small degree been overlooked, only having had one visit. The contention of those in charge was, I think, that they did not need so much assistance as those just starting, and that they had in past seasons been favored and helped.

We advocated, by holding meetings and every other means, to impress on the factorymen and patrons the great advantages and justice of paying for milk according to its butter-fat value ; and I am pleased to report that the majority of our creameries are now paying for the milk according to the per cent. of butter-fat it contains. There are a few, however, who still cling to the method of pooling, and others who tried to pay according to value and abandoned it. The dis-atisfaction in these last mentioned was caused, I am safe in saying, by the factoryman employing some one to test the milk in whom the patrons did not repose the strictest confidence, and as a result there was dissatisfaction and a loss in patronage to the creamery. to those who are not paying according to butter fat value, my advice would be to get sample bottles and proceed to testing each patron's milk with as much care and caution as though the milk was to be paid for by the test. When the first month's pay bills are made out do it in both pooling system, and butter-fat. The patron then has before him in black and white what he should have received, also what is due him by pooling. It has a double benefit by educating the butter-maker in testing, and it is an object lesson to the patron, which sooner or later will convert him to the fact that he is either being benefited by his neighbour's skill in breeding and care of cattle, or that he is donating annually by force of unjust practices to his neighbor's factory receipts. There are those in every factory district who are ready to argue and cry down the practice of paying for milk according to its value. In my opinion they compare very favorably to the school teachers who would teach that the earth is round or flat, just as the trustees wanted it.

My regular work began on May 19th and finished on December 19th, and all this time was spentat the various creameries throughout the Province. We held eleven public meetings. Some of the meetings were in districts where there was no creamery, but, I am pleased to be able to say, that in some of these places creameries are now being put in readiness for the next season's milk. I tested 2,300 samples of milk with the Babcock test and lactometer. There were a few of the samples that were not sent to the creamery as pure as when drawn from the cow. The persons sending them were reminded of the fact in each case, and given full particulars as to what was added to or taken from the milk.

The season just ended has been to some degree unsatisfactory as to prices of butter as compared with other dairy products, and much of the butter made has been put in cold storage, a practice which this Association should try to remedy. The butter made in Ontario is no more perishable than that made in Denmark, Australia or in any of the colonies which enjoy a good reputation in the English markets. But those who enjoy the best reputation get their butter on the market and to the consumer the freshest, and our aim should and must be in this direction before we can expect to enjoy the best reputation for Canadian creamery butter.

During the season all my time and energy have been given to the creameries, and should the work be entrusted to me for another season I will do all in my power to advance the cause.

Mark Sprague.

APPENDIX

LIST OF MEMBERS

DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

Name.	P. O. Address.	Name.	P. O. Address.
Anglin, Thomas	Atkinson.	Hill, William	Frankville.
Ashley, Harford	Belleville.	Harrity, John	Warkworth.
Armstrong, H. F	Manotick.	Hutcheson, J. B	Sharbot Lake.
Abbott, Samuel	Mountain Grove.	Henderson, John	Winchester.
Burnash, John	Brewer's Mills.	Hale, William	Gananoque.
Buro, Jehial	Mille Roches.	Halladay, E. V	Elgin.
Bruyere, Ormond	Embrun.	Halladay, R. G	Willetsholme.
Bird. Morden	Stirling.	Huffman, James	Chantry.
Bissell, Wm. T	Algonquin.	Hurst, A.	Gananoque.
Bensley, George H	Warkworth.	Ireton, Adam	Drummond Centre.
Babcock, A.	Wilton.	Jackson, Simeon	Hartington.
Blanchard, L. F.	Athens.	Keating, James	Lansdowne.
Brown, C	Athens.	Kilne, F. E.	Lakefield.
Buell, A. W.	Caintown.	Kidd, Edward	North Gower.
Berlangnet, J. W	Admaston.	Kenney, Joseph	Kingston.
Britton, Freeman	Gananoque.	King, D. L	Sydenham.
Byers, William	Gananoque	Knapp, J. E	Plum Hollow.
Bissell, Howard	Brockville.	Lonergan, J. J	Warkworth.
Campbell, A	Ormond.	Loverin, E. A.	Greenbush.
Clarke, James F	Balderson.	Lennan, B	Godfrey.
Cheetham, S. S	Morton.	Leroux, G	Summerstown.
Cook, J. L	Warburton.	Legge, Joshua	Gananoque.
Currie, A. P	Vancouver, B.C.	Leroy and Ogden	Barb.
Cowan, O. D	Gananoque.	Leader, Benjamin	Caintown.
Cunningham, R. W	Gananoque.	Lane, James	Pittsferry.
Craig, R. A.	North Gower.	Lonergan, M	Warkworth.
Carlaw, T. B	Warkworth.	McCalpin, Henry	South Lake.
Culbert, B	Athens.	McCready, Robert	Lyn.
Cochrane, Charles	Sunbury.	McKeown, George	Sidney Crossing.
Cross, Fairman	Lansdowne, box 45	McAlonan, Jos	Seeley's Bay.
Connor, John	Gananoque.	McLeod, W. D	Kirk Hill.
Chapman, Franklin	Seeley's Bay.	McRae, C. F	Moose Creek.
Clark, Hugh	Smith's Falls.	McEwan, D. W.	Maxville.
Dicks, Charles	Lennoxville, Que.	McConnell, J. D	Dominionville.
Dargavel, John R.	Elgin.	McNamee, J. W	Stanleyville.
Daly, P. R	Foxboro'.	McDonald, H. A	Sunbury.
Dougherty, James	Elginburg.	McNeil, Edgar	Lansdowne.
Dean, J.	Moira.	McTavish, John	Vancamp.
Derbyshire, D.	Brockville.	McCann, J	Perth.
Dawson, Frank	South Lake.	McDonald, William	St. Lawrence.
Duff, Wm.	Inverary.	McCullough, George	Perth.
Davis, H. J.	Athens.	McDonald, J. A.	Admaston.
Eager, William	Morrisburg.	McDonald, W. S	Gananoque.
Echlin, John	Balderson.	McCarney, Neil	Gananoque.
Eastman, T.	Metcalfe.	McCallum, W. B	Toledo.
Ewing, D	Warkworth.	McKenzie, Wm	Vankleek Hill.
Fairman, Wm. M	Gananoque.	McCuaig & Cheney	Vankleek Hill.
Fitzgerald, Wm.	Dufferin.	McLean, L. M	Finch.
Fehan, M.	Westport.	McConnell, J. D	Dominionville.
Ferrier, A. A	Scotch Line.	McEwan, D. W.	Maxville.
Fairfield, S. A	Newboro.'	Matcher, S	Peterboro'.
Faulkner, W. T.	Cassburn.	Mercer, John	Mallorytown
Guthrie, Miss Nina	Perth Road.	Murphy, P. J.	Bogart.
Guthrie, William	Perth Road.	Munro, William	St. Elmo.
Gagnè, Joseph	Embrun.	Madden, E. J.	Newburg.
Gallagher, L. L	Wilton.	Murphy, R. G	Elgin.
Grant, W. W	Peterboro'.	Mustard, George	Elgin.
Gibson, G. M	Douglas.	Morton, Herbert	Moira.
Glasgow, W. C	Cannamore.	Mark, Peter	St. Eugene.
George, John	Cataraqui.	Newman, William	Prescott.
Hardy, R A	Bowesville.	Newman, J. W	Spencerville.
Hall, William	Woodstock.	O'Keefe, D	Elgin.

LIST OF MEMBERS—*Continued.*

Name.	P. O. Address.	Name.	P. O. Address.
Oliver, H.	Rathwell, Man.	Smith, C. H	Chantry.
Osborne, Geo	Kingston.	Stringer, M. G	Sand Bay.
Pennock, John	Hartington.	Stringer, M. P	Sand Bay.
Porter, Geo	Elginburg.	Somerville, R. H	Morton.
Publow, G. G.	Perth	Scott, Herbert	Caintown.
Purvis, A. P	Maxville.	Thompson, Julius	Gananoque.
Patterson, T. G	Sunbury.	Thurston, R. Mc	Dunsford.
Rogers, Alex	Warkworth.	Thompson, T	Inverary.
Rice, Frank A	Currie's Crossing.	Taylor, George, M. P	Gananoque.
Rone, Fred	Mt. Chesney.	Totten, H.	Renfrew.
Rose, Alexander	Van Camp.	Thompson, R. W	Spring Brook.
Renaud, Henry	St. Eugene.	Walroth, J. W	Maberly.
Rollins, Robert	Madoc.	Wilson, William	Renfrew.
Richardson, William	Gananoque.	Wight, J. R	Fournier.
Ritchie, Alexander	Inverary.	Wood, C. H	Maxville.
Raphael, John	Mallorytown.	Wilson, Wm	Apsley.
Somerville, Thos. J	Morton.	Weir, Wm	Lang.
Sinclair, J. C	Brandon, Man.	Whitton, James	Wellman's Corners.
Storm, C. N	Wilton.	Wade, Henry	Toronto.
Singleton, J. H	Newboro'.	Webster, W. G	Kingston.
Stark, T. C	Pittsferry.	Webster, John	Brockville.
Sanderson, M. E	Selwyn.		

DAIRYMEN'S ASSOCIATION FOR WESTERN ONTARIO.

Aldrich, Arnold	Newbridge.	Bain, John G	Fullarton.
Allen, Edwin S	Box 233, Ingersoll.	Ballantyne, W. W	Stratford.
Adams, Chas	Trowbridge.	Ballantyne, R. M	Stratford.
Angus, W. D	Newbridge.	Bell, J. W	Box 97, Newmarket.
Alderson, Thos	Kintore.	Baird, Thos. T	Crystal City, Man.
Atkinson, Wm	Medina.	Baird, Chas	Motherwell.
Anstice, F. C	Springford.	Bernard, Sim	St. Paul's Station.
Anderson, Wm	Woodstock.	Briggs, James	Jonesdale, Wis.
Affleck, John	Harrow.	Barrett, H. M	Port Rowan.
Aker, A. J	St. Williams.	Brace, W. (Phelps, Brace & Co)	Detroit, Mich.
Brown, M. R	Appin.		
Borland, John	Villiers.	Bond, B	York.
Burkholder, H. J	Bluevale.	Bogue, Thos	Strathroy.
Bowey, J. T	Avon.	Bearss, T	Corinth.
Bothwell, Wm	Hickson.	Brown, O. H	Dunboyne.
Babb, Joseph	Carlingford.	Bain, J. W	Jarvis.
Brown, Rich. W	Sebringville.	Butcher, David	Rowan Mills.
Ballantyne, Thos., jr	Stratford.	Billings, J. S	North Ridge.
Brodie, John	Mapleton.	Brown, Joseph	Tilbury Centre.
Ballantyne, John	Listowel.	Ballantyne, John	Pine River.
Brodie, Geo. B	Gladstone.	Barr, S	Mossley.
Barr, Robert	Ethel.	Burrell, D. H	Little Falls, N.Y.
Ballantyne, Hon. T	Stratford.	Bigham, J. P	Dereham Centre.
Baird, A. W	Avonbank.	Baxter, John	Brownsville.
Baskett, Miss Sarah	London.	Corneff, Thos. H	Shelburne.
Boothe, Geo. E	Ingersoll.	Crinklaw, J. W	White Oak.
Biffin, A. J.	Bright.	Cooke, Geo. J	Ingersoll.
Bristow, James	Bright.	Chenowith, Alfred	Ingersoll.
Boyes, Geo. A	Evelyn.	Clarke, Alex	Shakespeare.
Boyes, Frank	Nilestown.	Clark, C. A	Brooksdale.
Boyes, J. W	Nilestown.	Chambers, R	Halliday.
Brown, A. E	Ingersoll.	Cousins, Geo	New Hamburg.
Blayney, John	Lynnville.	Cooper, C. R	Toronto.
Burnitt, John G	Brooksdale.	Cosh, Newton	Woodstock.
Beacon, The	Stratford.	Connolly, B. J	Kintore.
Blackmore, J. G	Drumbo.	Copeland, J. W	Eastwood.
Bush, John	Sebringville.	Coulton, W. H	Sebringville.
Ballantyne, M	Stratford.	Crowe, Wm. J.	Mount Hope.
Bell, A. T	Tavistock.	Cuthbertson, John	Wellburn.
Biffin, James	Tavistock.	Campbell, Albert	Thedford.
Bigham, Joseph	Hickson.	Casey, S. D	Mt. Pleasant.

LIST OF MEMBERS.—*Continued.*

Name.	Address.
Cleland, James	Listowel.
Clark, Rev. W. F	Guelph.
Crowlay, Michael	Kinkora.
Calder, A. G	Clárksburg.
Cade, Wm	St. Marys.
Cuddy, Robert	Woodstock.
Cowie, James	North Keppel.
Corliss, J. G	Burgessville.
Curzon, A. R	Guelph.
Chalmers, D	Poole.
Caddy, Thos	Banner.
Casswell, F	London.
Cranston, R R	West Magdala.
Clarke, Daniel	Clearville.
Crawford, J. A	Ingersoll.
Campeau, Dr	Harrow.
Clute, John A	Sillsville.
Coomber, H	Port Elgin.
Carson, W. J	Metcalfe.
Clarke, James	Vienna.
Connolly, James	Alsfeldt.
Dempsey, John	Fairview.
Dillon, T. J	Charlottetown, P. E I.
Dempsey, D. A	Stratford.
Dunlop, W. J	St. Marys.
Durst, Frank	Sebringville.
Dalton, W. H	Dorchester.
Dunn, J. P	Ingersoll.
Dunn, T. W	Embro.
Downham, Peter	Innerkip.
Dallas, John	Thedford.
Dobie, Robt. G	Baden.
De Long, G. V	Harrow.
Duncan, L. A	Forest.
Dunn, W. L	Clear Creek.
Dawson, Wm	Vittoria.
Dickey, C. G	Komoka.
Dunn, E. H	Marden.
Dickson, Wm	Atwood.
Elliott, James	Tilsonburg.
Eagle, Harold	Attercliffe Station.
Eccles, John	Kinkora
Edwards, A. W	Caistorville.
Edwards, A. J	Woodburn.
Edgar, Wm	Culloden.
Empey, Geo	Culloden.
Eede, R	Arner.
Edwards, W. O	Box 483, Ingersoll.
Fraser, John	Stratford.
Freer, Wm	Sheffield.
Facey, Robert	Harrietsville.
Farmer's Advocate	London.
Findlay, J. H	Barrie.
Fillmore, J. W	Thamesford.
Ferris, Geo	St. Williams.
Fox, John	Colchester.
Farmers' Union Co-operative Cheese Association	West Lorne.
Gillespie, H. W	Ida.
Gray, A. W	Stratford.
Gray, James A	Atwood.
Goodhand, G. E	Milverton.
Gillard, Wm	Stratford.
Gilmour, John	Nilestown.
Griffeth, A	Thorndale.
Gillespie, Ed	Crosshill.
Grieves, Thos	Wyandotte.
Ginther, E	Bismarck.
Green, R. H	Brussels.
Gibbons, Wm	Norwich.
Garnham, E. A	Straffordville.
Gardiner, Wm	Valetta
Gibbs, A	Cheapside.
House, W. H	Tilsonburg.
Holmes, James L	Newton.
Hurlburt, Wm	Hawtrey.
Humphrey, Thos. J	Birr.
Hart, T. P	Woodstock.
Harrison, H. W	Kincardine.
Hatch, S. W	Lavender.
Hunt, Frank	Lambeth.
Henderson, J. T	Pine River.
Hunter, Samuel	Rockton.
Hotson, J. L	Avonbank.
Hawker, A	Crumlin.
Hamilton, Walter	Atwood.
Holland, B. A	Culloden.
Hollis, W. T	Atwood.
Harris, Wm	Rothsay.
Hay, W. J	Listowel.
Hicks, James	Springford.
Hamilton, C. A	Guelph.
Humphrey, Geo	Norval.
Hodgson, H. A	Box 837, Montreal,
Henderson, E. G	Windsor.
Hunter, A. J	Pontiac, Mich.
Harcourt, Geo	St. Anns.
Hill, Wm. A. (Town Line)	St. Thomas.
Hammond, Geo	Yarmouth Centre.
Hutchison, Albert	Vandeleur.
Holt, E. L	Albuna.
Hill, J. H	Centreville.
Idington, John	Stratford.
Isaac, John R	Box 396, London.
Isard, J. S	Williscroft.
Impett, Thomas	London West.
Jelly, Simon	Shelburne.
Johnston, Robert	Bright.
James, J. A	Nilestown.
Johnston, Ed	Holmesville.
Johnston, E. L	Tilsonburg.
Jack, Hugh T	Newton.
Jackson, Joseph A	Straffordville.
Jackson, Joseph	Dundalk.
Knechtel, Moses	Tavistock.
Kew, Daniel	Granthurst.
Kinney, Geo	Winthrop.
Karn, James	Embro.
Keillor, A	Wallacetown.
Kinnear, A. M	Maxwell.
King, R. J	Victoria, B.C.
Kneal, W. H	Holbrook.
Leitch, L. A	Lucknow.
Lane, J. A	Wilcox.
Laird, S. W	Stratford.
Lundy, C. E	Newmarket.
Lee, S. R	Molesworth.
Leach, C. G	Eden.
Lauder, J. L	Mitchell.
Leonard, E. & Sons	London.
Lounsbury, Darwin	Warner.
Leak, F. A	Blytheswood.
Laird, J. K	Blenheim.
Laird, Arch	Blenheim.
Laird, J. S	Blenheim.
Miners, C. G	Tilsonburg.
Millar, John F	Brantford.

LIST OF MEMBERS.—*Continued.*

Name.	Address.
Mannenn, J. H	Holland.
Mills, George	Thamesford.
Marshall, W. J	Stratford.
Monteith, Nelson	Stratford.
Moore, Alex	Caledonia.
Moore, W. D	Listowel.
Manes, W	Millarton.
Marshall, Robt	Lakeside.
Messer, John	Hawkesville.
Morrison, James	Henfryn.
Messer, Wm	Bluevale.
Montgomery, James	Walmer.
Murray, Alex	Stratford.
Morrison, Miss Mary	Newry.
Morrison, Miss A	Newry.
Manser, David	Brunner.
Morrow, Fraser	Teviotdale.
Murray, Robert	Brooksdale.
Morrison, J. T	Orono.
Monk, L. D	Dorchester.
Monck, Jno. A	Woodstock.
Morrison, Albert A	Newry.
Morden, John	Oakdale.
Moorehouse, W. H	Shetland.
Mawlan, Henry	Florence.
Mason, S. C	Bothwell.
Marcus, A	Bothwell.
Morrow, T	Simcoe.
Moore, C. F	St. Clair, Mich.
Murray, W. H	Strathroy.
Mallory, C. A	Yarmouth Centre.
Morrison, M	Harriston.
Myers, Geo. A	Mt. Albert.
Miners, Chas	Leamington.
Malott, Solomon	Cottam.
Milne, R. R	Burgoyne.
Muir, J. B	Avonbank.
Mitchell, W. H	Box 91 Lennoxville, Que.
alcolm, Thos	Kinloss.
McCormick, Thos	Glen Allan.
McKellar, D. N	Wingham.
McMylor, Thos	Vesta.
McLeod, John	Bervie.
MacLaren, A. F	Stratford.
McKay, Alex	Lakeside.
McKenzie, Alex	Donegal.
McCrimmon, S	Otterville.
McPherson, Jno. (Lake Road)	Fingal.
McMillan, Donald	Poole.
McDonald, Geo	Bluevale.
McCartney, Hugh	Brucefield.
McEwan, J	Verschoyle.
McEwan, Frank S	Verschoyle.
McAllister, S	Donegal.
MacLaren, J. B	Ingersoll.
McNaughton, James	Norwich.
McGillivray & Spiers	Listowel.
McMurray, R. B	Gladstone.
McMaster, Ferguson	St. Marys.
McKie, George	Norwich.
McIntyre, A. M	Lawrence.
McEwan, J. B	Wellington, New Zealand.
McCallum, Frank	Box 141, Simcoe,
McCallum, Alex	Pond Mills.
McCrae, John	Wareham.
McLean, John	Harrow.
McKellar, D. A	White Oak.
Nimmo, Thomas	Box 107, Ripley.
Neilson, Abraham	Walsh.
Nevill, Wm	Cottam.
O'Flynn, Timothy	Kinkora.
O'Neill, J. H	Harrietsville.
Ormerod, Wm	Napier.
Orton, Alvin	Cottam.
Poole, James	Waba.
Prain, John	Harriston.
Pettit, J. C	Burgessville.
Peters, Oliver	Brunner.
Pettypiece, W	Motherwell.
Pearce, J. S	London.
Pickard, Amos	St. Marys.
Perkins, J. W	Leesboro'.
Paget, J. N	Canboro'.
Phelps, L. L	Mt. Elgin.
Pate, James	Brantford.
Philip, David	Sparta.
Packham, James	Stratford.
Pow, John	Vittoria.
Powell, John	Shetland.
Penhale, R. A	St. Thomas.
Palmerton, N. S	Walsh.
Phillips, Richard	Rothsay.
Patton, Miles	Harrow.
Parr, Frank	Hampton.
Quick, P. L	Harrow.
Quinan, Peter	Cottam.
Rice, Frank A	Currie's Crossing.
Riesberry, John	Bright.
Riddell, Andrew D	Shakespeare.
Richardson & Webster	St. Marys.
Revell, C. A	Hyde Park.
Ralph, George	Glanworth.
Reany, J. B	Harrietsville.
Reach, F. C.	Newry.
Richardson, L. R	Strathroy.
Robeson, W	Campbell's Corners.
Rinch, E	Currie's Crossing.
Robertson, Geo. S	Lucknow.
Rollings, Walter	Walsh.
Robertson, R	Box 396, London.
Roberts, Wm	Oakdale.
Roberts, Thos	Sparta.
Rowe, R. J	South Woodslee.
Reid, David, jr	Goldsmith.
Rowe, A. E	Blenheim.
Robertson, A. W	Villa Nova.
Rickard, Wm	Harrietsville.
Sutherland, James (Verret, Stewart & Co)	Montreal.
Steveley, S. & Son	London.
Shantz, E	Wallace.
Southwick, C. W	Avonton.
Stone, E. J	Verschoyle.
Stevenson, S. K	Camlachie.
Smith, S. A.	Dorchester.
Sadler, Wm R	Lambeth.
Stewart, Duncan	Hampstead.
Smith, C. W	Centralia.
Saul, Isaac	Crumlin.
Smith, Richard	Culloden.
Smith, A. D	Brownsville.
Stacey, Thos	Fullarton.
Schneider, Louis	Carthage.
Sinclair, Duncan	Cotswold.
Schneitzer, Oscar	Tavistock.
Swanson, C. D	St. Marys.

LIST OF MEMBERS.—*Continued.*

Name.	Address.
Sands, A. M	Culloden.
Scott, Jno. H	Cromarty.
Schrumm, Alf	Bismarck.
Stacey, Wm	Fullarton.
Stacey, John	Mitchell.
Stacey, James H	Devizes.
Stratton, R. W	Straffordville.
Small, Thos. W	Teeswater.
Smith, Levi	Tilsonburg.
Stillman, Robt	Valentia.
Stanley, James	Lucan.
Smith, O. T	Binbrook.
Scott, John	Listowel.
Sterritt, Wm	Motherwell.
Snell, Robt	Norwich.
Shearer, W. R	Villa Nova.
Storey, J. E. (Bow Park)	Brantford.
Shepherd, John	Bothwell.
Silcox, Edgar	Shedden.
Shearer, W. C	Bright.
Scott, J. W	Sparta.
Senn, John	York.
Starr, Francis	Newmarket.
Schrumm, Michael	North Ridge.
Sleightholm, F. J	Humber.
Singleton, Winnard M	Newboro'.
Stonehouse, J	Port Perry.
Smith, E. P	Chilliwack, B.C.
Thomas, J. H	Ingersoll.
Tackaberry, N. (362 Oxford St).	London.
Tehen, Thomas	Otterville.
Treffry, Chas	Hawtrey.
Travis, Geo	Courtland.
Talbot, J. L	Lucan.
Turnbull, J. L	Listowel.
Thompson, R	Eastwood.
Thompson, F	Woodstock.
Thompson, J. L	Belfast.
Thistle, Robert	Stratford.
Taylor, Henry	Simcoe.
Thackeray, Wm	Harriston.
Travis, C. C	Acacia.
Travis, F. E	Straffordville.
Tabor Bros	Port Perry.
Usher, Isaac	Thorold.
Varden, F. W	Springford.
Willoughby, W. G.	Walnut.
Williams, J. F	Ingersoll.
Wooley, J. H	Simcoe.
Wardell, Thos. L	Woodstock.
Wilford, John	Brownsville.
Wardell, John	Woodstock.
Wallace, S. T	Mount Forest.
Wood, Geo. R	St. Marys.
Wyles, W. J	Innerkip.
White, Harry	Hawkesville.
Wilkinson, J. H	Verschoyle.
Wilson, Hugh E	Arkona.
Wood, W. B	Bryanston.
Walz, Feed	Dorking.
Wilson, Francis	Britton.
Whitelaw, R	Woodstock.
Wardell, John	Springford.
Williams, J. H	Paris Station.
Woods, Wm	Molesworth.
Wallace, Alex	Verschoyle.
Waldie, Thos	Box 324, Stratford.
Wilson, C. C. L	Ingersoll.
Williamson, A	Ingersoll.
White, Robert	Oakdale.
Walker, Ed	Oakdale.
Walmsley, Wm	Walsh.
Walker, Geo. A	Box 50, Dresden.
Wickett, N. H	York.
Wright, Thos	Singhampton.
Webb, C. C	Newmarket.
Whistle, George	Albuna.
Whiting, Joel	Cottam.
Warner, T. H	Guilds.
Young, T. E	Strathroy.
Young, A	Princeton.

CREAMERIES' ASSOCIATION OF ONTARIO.

Name.	P. O. Address.	Name.	P. O. Address.
Abrams, Wm	Summerstown.	McIntosh, J. I	Toronto.
Adolph, John H	Chesley.	McIntyre, David	Paisley.
Anderson, James	Chesley.	McNally, Henry	Walkerton.
Armitage, C. W	London.	McNally, Robert	Chesley.
Banford & Johnson	Hainsville.	McIntyre, Donald	Paisley.
Binion, W. C	Iroquois.	McLean, Thos. G	Ormond.
Brill, S. R	Teeswater.	McLaggan, Donald	Chesley.
Buist, L. O	Bolton.	McDonald, John	Chesley.
Beaton, John A.	Chesley.	McGill, Thomas	Desboro'.
Bell, W. D	Chesley.	McDonald, Malcolm	Chesley.
Brubacher & Snyder	St. Jacobs.	McTavish, Peter.	Chesley.
Brown, V	Elmwood.	Montgomery, David	Teeswater.
Bulman, W. E	Preston.	Moorehouse, Ernest	Newbury.
Boyd, T	Toronto.	Munroe, Frank	Dixon's Corners.
Brown, Thomas	Holstein.	Moore, Thomas	Chesley.
Bearman, Robert	Chesley.	Maxwell, Joseph	Chesley.
Calnan, George	Iroquois.	Martin, Robert	Toronto.
Coons, John	Ventnor.	Millar, Thos. J	Spencerville.
Cooper, C. R	Toronto.	Malcolm, John	Chesley.
Cull, A. G	Guelph.	Osborne, Wm	Woodbridge.
Croil, John H	Aultsville.	Oliver, M G	Whitechurch.
Carkner, A. D	Ormond.	Pilow, Joseph	Camerontown.
Campbell, A	Ormond.	Philp, J. W	Balsam.
Claxton & Ballachey	Paisley.	Philp, Robert	Cadmus.
Carter, Henry	Chesley.	Paterson, W. R	Chesley.
Cornett, R	Dundalk.	Pearce, J. S	London.
Carscadden, Thomas	Dobbinton.	Quinn, James	Newington.
Crow, Dr. W. A.	Chesley.	Quinn, J. H	Osnabruck Centre.
Dunsmore, Neil	Durham.	Rorke, H. J	Meaford.
Dargavel & Murphy	Elgin.	Rutherford, W. D	Iroquois.
Derbyshire, D	Brockville.	Randall, David	Ayton.
Dalgarno, John	Dobbinton.	Reed, G. W	Chesley.
Doherty, James	Gillies' Hill.	Rahn, John	Desboro'
Dargavel, A. M	Durham.	Rowand, Wm	Walkerton.
Elliott, J. H	Chesley.	Robertson, A. G	Kenmore.
Foster, S. M	Moira.	Rae, Andrew	Malcolm.
Ferguson, Robert	Chesley.	Ross, Thomas	Chesley.
Gillespie & Johnston	Burks Falls.	Scott, Thomas.	Glen Stewart.
Gerow, W. F.	Napanee.	Smith, James O	Cedar Springs.
Graham, R. J	Belleville.	Steffler, L. B	Formosa.
Gimby, Dr. Edwin	Chesley.	Struthers, James	Owen Sound.
Hayes, H. J	Aultsville.	Sanderson, M. E	Selwyn.
Henderson, H. D	Whitechurch.	Strong, P. W	Brockville.
Horton, T. W	New Dublin.	Spencer, J. B	London.
Hunter Samuel	Rockton.	Switzer, R. J	St. Marys. Box 196.
Halliday, Wm	Chesley.	Sprague, John	Ameliasburg.
Halliday, M A	Chesley.	Sutcliffe, Thomas	Marmion.
Henderson, E. G	Windsor.	Savage, Samuel	Chesley.
Howard, Samuel	Gorrie.	Shouldice, James	Chesley.
Henderson, R	Elmwood.	Snediker, Charles	Haysville.
Halliday, D. M	Chesley.	Stanley, George	Chesley.
Hendrie, George	St. Marys.	Shouldice, John	Chesley.
Halliday, R	Chesley.	Schonn, Joseph	Chesley.
Irvine, Wm	Martintown.	Stewart, Dr J. M.	Chesley.
Jones, John	Exeter.	Stinson, W. H	Chesley
Johnston, John	Woodbridge.	Tomlinson, Lewis	Marsh Hill.
Jackson, John	Chesley.	Thompson, Joseph	Chesley.
Kuntz, E. G	Formosa.	Tolton, C. E	Stratford.
Karn, Philip	Chesley.	Weinert, August A.	Neustadt.
Kennedy, Duncan	Vernon.	Wenger, Aaron	Ayton.
Kyle, Wm	Chesley.	Williams, R J	Chesley.
Longhurst, George	Kirkton.	Ward, Richard	Durham.
Lawson, Joseph	Chesley.	Warne, E. S.	Toronto.
McAllum, Lorne	Guelph.	Wallbridge, E	Belleville.
McCauley, Daniel	Ventnor.	Zinkann, J. N	Wellesley.

ANNUAL REPORT

OF THE

FARMERS' INSTITUTES

OF THE

PROVINCE OF ONTARIO,

1894.

I. CENTRAL FARMERS' INSTITUTE.
II. SUPERINTENDENT OF FARMERS' INSTITUTES.

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE, TORONTO.)

PRINTED BY ORDER OF THE
LEGISLATIVE ASSEMBLY OF ONTARIO.

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1895.

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ANNUAL REPORT

OF THE

FARMERS' INSTITUTES OF ONTARIO.

To His Honor the Lieutenant-Governor of Ontario:

The undersigned has the honor to present herewith the report of the Farmers' Institutes of Ontario for the past year. It contains the minutes of the eighth annual meeting of the Central Farmers' Institute held February 5th, 6th and 7th, 1894; and the first annual report of the Superintendent of Farmers' Institutes.

Respectfully submitted,

JOHN DRYDEN,

Minister of Agriculture.

TORONTO, August, 1895.

CENTRAL FARMERS' INSTITUTE.

OFFICERS FOR 1895.

President	T. G. Raynor	Rosehall.
Vice-President	David McCrae	Guelph.
Secretary-Treasurer	A. H. Pettit	Grimsby.
Auditors	G. A. Aylesworth	Newburg.
	Thos. A. Good	Brantford.

Directors.

Division No. 1	J. C. Dance	Kingsmill.
" 2	Hon. Charles Drury	Crown Hill.
" 3	F. L. Sovereign	Waterford.
" 4	Simpson Rennie	Milliken.
" 5	J. B. Ewing	Dartford.
" 6	R. J. Jelly	Jellyby.
" 7	Andrew Kennedy	Winchester.

SUPERINTENDENT OF FARMERS' INSTITUTES OF ONTARIO.

F. W. HODSON ....ONTARIO AGRICULTURAL COLLEGE, GUELPH.

EIGHTH ANNUAL MEETING

OF THE

CENTRAL FARMERS' INSTITUTE.

The eighth annual meeting of the Central Farmers' Institute of Ontario was held in the parlor of Shaftesbury Hall, Toronto, on February 5th, 6th and 7th, 1895.

The meeting was called to order at 2 p.m., the President, Mr. JAMES MCEWING in the chair.

Moved by Mr. D. MCCRAE, seconded by Mr. CLARKSON, that the minutes of last meeting, as printed in the report, be taken as read.

Moved in amendment by Mr. MCCOLL and seconded that the minutes be read. The amendment was lost, and the original motion was carried.

The Secretary then read the report of the Executive Committee and the Rules of Order and Procedure as amended :

REPORT OF THE EXECUTIVE COMMITTEE.

To the Officers and Members of the Central Farmers' Institute of Ontario :

GENTLEMEN,—The Executive Committee beg to tender the following report :

Three Executive meetings have been held during the year, the first at the close of the annual meeting, members all present except Mr. Jelly.

On motion the Secretary was instructed to forward all resolutions and memorials, asking legislation, to the respective Governments.

The second meeting was held on the 3rd of July, at the Walker House, Toronto. The arrangement of subjects to be placed upon the order paper for the next annual meeting was considered.

A committee was appointed to confer with Hon. John Dryden and Dr. James Mills, in reference to parasitic and fungi diseases, with the view that they be brought more prominently before the Institutes.

The third meeting was held on the 17th of October, at the Walker House, Toronto. Prof. Craig, of the Agricultural College, Madison, Wisconsin, was introduced and spoke of the work of the Institute in that State.

On motion the rule of order referring to new business was amended to read as follows : All resolutions embodying new business other than that contained in the order paper shall be referred to the committee on resolutions, and by them passed to their respective committees.

The Secretary was instructed to write the secretaries of local institutes asking them to call their directors together to discuss any question their Institute might wish to have brought before the Central Institute.

The subjects upon the order paper was discussed and a special committee appointed to complete it. The following gentlemen were invited to be present and address the Institute: Hon. John Dryden, Minister of Agriculture; Prof Wm. Saunders, Director Experimental Farms; Dr. James Mills, President Ontario Agricultural College; J. W. Robertson, Dominion Dairy Commissioner; Prof. H. H. Dean, O. A. C., and F. W. Hodson, Superintendent of Farmers' Institutes.

ABSTRACT OF TREASURER'S ACCOUNT.

Receipts.

February 6th, 1894, Balance on hand from last report	$ 766 39
December 12th, 1894, Cash grant from Ontario Government	800 00
	$1,566 39

Disbursements.

By cash paid, printing, 1894	$ 23 75
" Stenographer	60 00
" Auditors	14 60
" Expenses delegates *re* legislation	80 60
" Expenses Executive Committee	260 51
" President's expenses, as per resolution	150 00
" Postage, telegrams, etc	18 85
" Hall rent	15 00
" Salary Secretary-Treasurer	250 00
Balance on hand	693 08
	$1,566 39

(For Executive Committee),

A. H. Pettit,

Secretary Treasurer.

Grimsby, February 4th, 1895.

RULES OF ORDER AND PROCEDURE, AS AMENDED.

1. This Association shall be known as the Central Farmers' Institute of Ontario.

2. This Institute shall be composed of two duly accredited delegates, elected annually by each local institute, and one representative from such other association as may from time to time be designated by the Executive Committee.

3. The object of this Institute shall be the discussion of matters relating to agriculture, to assist and promote any desirable legislation pertaining to the same, and to foster and protect in any legitimate way the interests of the farmers.

4. The officers of this Association shall consist of a President, Vice-President, Secretary-Treasurer and seven additional members who shall form an Executive Committee

5. It shall be the duty of the President to preside at all meetings of the Central Institute and Executive Committee.

6. It shall be the duty of the Vice-President to preside on all occasions in the absence of the President.

7. It shall be the duty of the Secretary-Treasurer to take the minutes of all proceedings of the Central Institute and Executive Committee meetings, receive and answer all correspondence, and keep an account of all money received and expended.

8 It shall be the duty of the Executive Committee to arrange for the annual meeting of the Central Institute, select subjects for discussion and forward a list of the subjects to the secretaries of local institutes and bring before the notice of the Institute any other matter they may deem of benefit to the farmers. carry out the business of the annual meeting and also take action in regard to legislation affecting the interests of the farming community. This committee shall meet at 11 o'clock a.m. on the first day of the annual meeting and appoint a committee to

receive credentials and supply delegates with tickets of membership which will admit them to the sessions of the annual meeting ; receive the Treasurer's statement, pass it to the Auditors, so that the Executive Committee's and Auditors' reports may be ready for the afternoon session.

9. The President, Vice-President, Secretary-Treasurer and Auditors shall be elected by open vote, after being nominated and seconded by two members present at the morning session of the second day, and the Executive Committee by a majority of the delegates present from the districts they represent and shall be by ballot

10 The annual meeting shall commence on the first Tuesday in February, in each year at 2 o'clock p.m , the place of meeting to be designated by the Executive Committee or by consent of the meeting.

11. In the discussion of any question no person will be allowed a longer time than ten minutes, neither shall he be allowed to speak upon the subject a second time unless in explanation.

12. All resolutions shall be presented in writing with the name of the mover and seconder.

13. All resolutions embodying new business, other than that contained in the order paper, shall be first referred to the committee on resolutions, and by them referred to their respective committees.

14. The following electoral districts shall constitute the several divisions of the Province for the purpose of electing the Executive Committee as follows :

Group No. 1 comprises Essex, Kent, Elgin, Lambton, Middlesex and Oxford.
Group No. 2—Huron, Bruce, Grey, Dufferin and Simcoe.
Group No. 3—Lincoln, Welland, Haldimand, Brant, Norfolk and Wentworth.
Group No. 4—Perth, Wellington, Waterloo, Halton, Peel and York.
Group No. 5—Ontario, Durham, Victoria, Haliburton, Peterborough and Northumberland.
Group No. 6—Hastings, Prince Edward, Lennox, Addington, Frontenac, Renfrew, Leeds and Lanark.
Group No. 7—Carleton, Grenville, Dundas, Russell, Stormont, Prescott and Glengarry.

Moved by D. McCrae, seconded by R. J. Jelly, that doubt having been expressed as to when the President elect should take the chair, the Executive Committee rule, that the President keep the chair till the evening session, and that the President-elect take the chair and duties of office only at the close of the annual meeting.

Moved by Mr. D. McCrae, seconded by Mr. Kennedy, that the report of the Executive Committee with the rules of order and procedure as amended and resolution attached be adopted. Carried.

AUDITORS' REPORT.

The following report of the auditors was then read by Mr. George A. Aylesworth :

To the Central Farmers' Institute of Ontario :

We, the auditors for 1894, beg leave to report that we have examined the books, accounts and vouchers of the Treasurer for the year 1894, and that we find them to correspond and to be correct, save that we were shown no advice for the amount and date of payment of the legislative grant, and no voucher beyond the entry in the account book for sundry items, for postage stamps and telegrams, amounting to $12.

We find the total expenditure for the year 1894, to amount to $873.31, leaving a balance in the treasury of $693.08.

(Sgd.) Thos. A Good,
Geo. Anson Aylesworth,
Auditors.

Toronto, February 5th, 1895.

Comparative Statement for 1893 and 1894.

	1893.	1894.
Legislative grant	$1,200 00	$800 00
Total expenditure	1,110 64	873 31
Balance at end of year	766 39	693 08

Moved by Mr. Good, seconded by Mr. Aylesworth, that the report of the auditors be adopted. Carried.

Moved by Mr. Mahon, seconded by Mr. McLean, that the auditors be granted the freedom of the floor, with the same privileges as the other delegates properly appointed. Carried.

PRESIDENT'S ADDRESS.

The President, Mr. McEwing, then delivered the following address: Allow me to congratulate the Ontario farmers in general, and members of the farmers' institutes in particular, upon the large number and representative character of the delegates from all sections of the Province, now assembled at this, the eighth annual meeting of the Ontario Central Farmers' Institute.

I use the term "representative" advisedly, as it is a well-known fact that wherever an institute exists the very best and most progressive farmers within reach are members of that institute. And, having confidence in the intelligence of the great body of farmers who are members of the different institutes, I have do doubt that they thoroughly realize the necessity of it, and the advantages to be derived by sending the best informed, most liberal, broad minded and progressive members available as delegates to this meeting, to meet their fellow farmers in convention, to take counsel together as to the best means to improve the existing conditions pertaining to agriculture; to aid and assist, sustain and strengthen, those vast and varied interests so intimately connected with, and so largely dependent upon progressive, successful and profitable agriculture; to improve the systems and methods employed, so as to produce the greatest quantity of products of the best quality at the lowest possible cost; to aid and assist the great agricultural interests of the country, by affording a better system of marketing our goods; to secure cheaper and more satisfactory transportation facilities for agricultural products—to sustain and strengthen each other in the endeavor to place and maintain Canada in the van as an agricultural country. These objects are well worthy of thought, study and effort by the best and brightest intellects amongst us, and I have no doubt will receive from you that attention and consideration which their importance so justly entitles them to. I may also congratulate the Farmers' Institute upon the appointment by the Ontario Government of a superintendent of institutes. Being fully alive to the importance of the educational work of the institutes, and realizing the necessity of improving and extending that work, the Government has acceded to the desire of the Central Institute, as expressed one year ago, and appointed an officer whose duty it shall be to devote his time and energies to further the interests of the institutes. It is often charged that governments make all or nearly all appointments, because of some political pull or some political services given in the past, but the appointment of the superintendent of institutes is one of the exceptions to the general rule, I believe; and I am much pleased to be able to congratulate those interested in institute work upon the fact that the appointment has evidently been made upon the sound business principle of giving the position to the man best qualified for the work. The course pursued by the Government in making the appointment in this case, I am sure will meet with your most cordial approval and augurs well for the further success of the institute work. And from what I have already learned of the gentleman who now holds the position, I do not think that either the Government or the farmers of Ontario are ever likely to regret the reasons which prevailed in making the appointment. In referring to this matter I may say that the farmers of Ontario are under a deep and lasting obligation to President Mills for the assistance he has so freely and generously given to the institutes in the past, and for the manner in which he gave his valuable services in the work of organizing and establishing the institutes—services which he continued until the work became so extended that it was impossible for him to give it the time and attention which its importance demanded. Long may he continue to wield the sceptre at the Ontario Agricultural College. to continue, improve and extend the good work already accomplished at that institution.

Before entering into discussion of the various subjects which will come before you, perhaps it might be profitable to occupy a little time in taking stock, as it were, of our position as a people depending largely upon agriculture for the measure of our prosperity. During the period which has elapsed since our last meeting, there has been a considerable amount of discussion in the press and on the platform, as well as in parliament, as to the measure of prosperity that is being enjoyed by the farmers in this country. From what I have been able to gather from the trend of that discussion, and I have given some little attention to it, the conclusions arrived at appear to depend to a great extent upon the political coloring of the glasses through which the situation is viewed. We have men of one political school declaiming loudly and eloquently of the prosperity of the husbandman of Canada; vehemently contending that they are the most wealthy and prosperous, the most happy and contented farmers on the face of the earth; that if there are some few farmers who are not prosperous, it is owing to the extravagant habits of the individual farmer, that he and his family have been indulging too much in top buggies, fancy pianos and that sort of thing. To prove the prosperity of the farmers beyond peradventure, we are told that the exports of agricultural products have increased from $32,000,000 to $52,000,000 during the last fifteen years. On the other hand, we have men of another political school who declaim as loudly and eloquently that the farmers are not wealthy and prosperous—in fact, that they are suffering severely by the existing depression—and in support of this they point to the large and ever increasing mortgage indebtedness of the farmers, to the tremendous depreciation in the value of farm property, and to the extremely low prices that are being realized for nearly all staple farm products. And they vehemently contend that this condition of affairs has been caused, or at least greatly intensified, by the fiscal policy adopted some sixteen years ago, and which has been extended and strengthened at various times and in divers ways since that time. There are men of yet another political school who declaim just as loudly and as eloquently that the farmers are being robbed and wronged by other classes of the community, that they have become mere hewers of wood and drawers of water to supply the incessant and ever increasing demands of the monopolists and combinsters, the politicians and public officialdom; that this state of affairs has been brought into existence by class legislation and the extravagance of those in high places in the land, and they vehemently contend that the only salvation for the farmers and for the country is to elect and send to parliament a sufficient number of farmers of their political persuasion to guide, control and direct all future legislation and expenditure. Believing, as I do believe, that if there was a greater number of farmers elected to parliament, we would be likely to have more economy practised in public expenditures; believing, as I do believe, that the farmers would receive a large measure of relief if there were no duties levied upon the goods they have to buy or to sell; believing, as I do believe, that our fiscal policy fosters and strengthens monopolies and combines and enables them to prey upon the industrial classes of the community; believing, as I do believe, that nearly all systems of tariffs, rebates and bounties, are nothing less than a species of legalized robbery of the many for the advantage of a few; believing, as I do believe, that the way in which the annual expenditure and public indebtedness has been going up by leaps and bounds, is a most serious matter to the taxpayers of the country—nevertheless I am firmly persuaded that the fundamental cause of the disastrous economic conditions from which the farmers of Canada are suffering so severely at the present time is something beyond mere tariff tinkering, class legislation or govermental extravagance, great as those evils may be. There is room, no doubt, for a difference of opinion as to the extent and severity of the existing depression. The situation, as it appears to a workman out of employment and with a family to support, or to a farmer struggling under a heavy mortgage indebtedness, has a vastly different aspect to that presented to those who may be feeding at the public crib, drawing an annual salary of two, five or eight thousand dollars as the case may be. The extremely low prices prevailing for the staple products of the farm, is no doubt the principal factor in causing the depression. Agriculture being the chief industry of the country, and the products thereof selling, as they are selling, below the cost of production, the natural results follow in the form of stringency in the money market (although the coffers of the banking institutions appear to be overflowing with money) stagnation in business, workmen out of employment, and depreciation in the value of property—a depreciation so great in farm values during the last decade, that thousands, yes, tens of thousands of farmers have had the savings of years swept away. These savings have been carefully and slowly accumulated by honest toil and frugal industry, and carefully invested as a first payment upon a farm to provide a home for himself and family; and now, owing to no fault of his own, but owing to changed economic conditions, he finds those savings have entirely disappeared and that the loan companies virtually own his home. This is no fancy picture drawn from the imagination, but a hard, cruel reality, which is altogether too prevalent amongst the farmers at the present time. A few years ago the staple farm products were selling upon a basis of $1 to $1.25 per bushel for wheat. During that period thousands of farmers assumed financial responsibilities which, under the then existing conditions, on sound business principles they were justified in assuming, but which under the conditions now prevailing, are likely in the near future to result most disastrously to many of them. No other result need be expected when the conditions are considered. Rent, interest, taxes and hired help, or, in other words, the fixed annual expenditure upon the farm has remained almost if not quite as high as formerly, while, on the other hand, the market value of the staple products of the farm has gone down at least 30 per cent. on the average, which means that the income is reduced nearly one-third, while the expenditure, of a necessity, has remained almost stationary. When accounts are balanced there is likely to be a considerable deficit at the end of the season's operations. It appears to me that the farmers are called upon to bear rather more than a fair share of the existing depression. Notwithstanding the lowered values of the so-called necessaries of life, the lawyers and doctors, the preachers and teachers, the bankers and boodlers, the traders and office holders, still demand and receive their high fees and comfortable salaries, their percentages and commissions. The artisan and mechanic still demand and receive so much per hour or per day for their labor, each in turn shifting the burden until it settles upon the shoulders of the tiller of the soil, who has no one beyond upon whom to unload, or doubtless the instinct of self preservation would induce him to follow the example of the others.

No doubt the primary cause of the farmer's unfortunate position at the present time is the extremely low prices prevailing for nearly all the products of the farm, the cost of production being greater than the market value of the product.

I have no desire to dispute or disagree with the figures given in regard to increased volume and value of the exports of our agricultural products during the last fifteen years. I am pleased and proud that such increase has taken place. I am quite willing to accept the figures as conclusive evidence of the intelligence, industry and progressiveness of the Canadian farmer and the fertility of Canadian soil. Notwithstanding the fact that during that period there has been very little increase in the number of persons employed in agriculture, notwithstanding the fact that prices of the staple farm products have gone down to such an extent as they have during recent years, it appears that Canadian farmers by their skill and industry have succeeded in increasing the volume and value of the agricultural exports from $32,000,000 to $52,000,000 in the short period of fifteen years. All honor and credit to them for so doing. But I decidedly object to accept that increase as conclusive evidence that their prosperity has increased. I humbly submit that the volume of trade or the amount of the output handled by any individual, corporation or community, is no criterion of the profitableness of the business. Prosperity, individual or national, is derived not from the volume or extent of the business or trade, but from the profits derived from such business or trade. I think you will agree with me that this is sound business ethics—sound in national as well as individual business.

I may say that at the present time we are confronted by some difficulties in our line of business. It is only a short time ago that we were shut out of the market for one of our leading products, the live stock trade with Great Britain, and we are now placed in the position that we have to slaughter our cattle at the port of entry. One of the remedies I think that will have to be provided in the near future, in case that embargo remains, will be something in the line of establishing a dead meat trade. It is evident that the trade as at present conducted is liable to so many fluctuations that it appears to be very unprofitable to the dealers, and the dealers in turn will of course make an endeavor to lessen their losses by taking a little more out of the producers.

Another matter which is confronting us, and which is likely to assume considerable importance in the near future, is in regard to cheese. I daresay you will all agree that probably the cheese and fruit industries are about the only important interests in connection with agriculture which have been holding their own lately. Our cheese trade is now threatened. Some two years ago or thereabouts we heard faint whisperings that the American dealers were branding some of their cheese as Canadian and putting it on the old country market as Canadian cheese, by that means placing an inferior article on the market and attempting to sell it on the merits and reputation of Canadian cheese. But lately it has leaked out that the dealers handling Canadian cheese have been putting summer cheese in cold storage and then placing it on the market in autumn and winter and selling it as autumn cheese, and by that means it has raised a doubt in the old country traders' minds in regard to the honesty of Canadian products. I think it is time that the Governments should move in the matter, to enact that all cheese manufactured in Canada be branded with the date of manufacture and the name of the factory in which it was manufactured. I believe this course would to a very great extent prevent a repetition of the methods which, if continued, will result most disastrously to this large and growing industry, and I think it would be advisable for this convention before adjourning to give some expression of opinion and make some recommendation along this line.

Whilst referring to this industry I may add that I observe that Australia, New South Wales and some other countries are going largely into the cheese industry to supply the British market and their governments are assisting to the extent of offering a bounty for the export of cheese of something like a cent and a half a pound. They are also providing cold storage facilities and using their utmost endeavors to further the interests of the agriculturists in their countries. We have to compete with those who are receiving assistance of that kind, and we want to have a fair show at least in putting our products on the market after we have produced a first class article, which, if honestly handled, will maintain its reputation for quality when compared with the product of any other country which is likely to enter into competition with us in this industry.

Another matter which is of considerable importance to us is the fact that there is a growing feeling amongst farmers that for some reason tuberculosis is becoming more prevalent amongst our herds. I notice by accounts from the United States that many large and valuable herds there have been slaughtered because of this disease.

It would be well for the farmers of Ontario and of the Dominion as well to inform themselves thoroughly, and the governments should assist them in this by collecting and disseminating all available and reliable information in regard to the best preventive measures to be taken against this disease. There is an opinion prevalent that certain classes or breeds of cattle appear to be more subject to it than others, and the ordinary farmers should ascertain if such opinion is a correct one, and if so, why? Also whether any particular system of management predisposes stock to attack by this disease. It is our business in this convention to consider different methods and different means whereby we can cheapen production to better enable us to successfully meet the ever increasing competition in agricultural products.

Another matter which is of very great importance to us as farmers is the matter of marketing and transportation. If any of you will carefully study the market reports published in the daily press and compare the prices paid for the staple farm products in the cities of this country to-day with the prices paid in American cities similarly situated, in regard to the old country markets—I am referring now to products that are largely controlled as regards price by the old country market—you will find in many instances the price of those products rules higher in the cities on the other side than in Canada. Now why is this? Not because their products are of a better quality, because Canada can beat the United States as far as quality is concerned. I may say, and I say it proudly, that there is no state of the union that can produce quality or quantity equal to the Province of Ontario. But the fact remains that the American farmer is getting a better price for his products than the Canadian farmer. Why is this? Largely because of the transportation facilities afforded him. We as a people are not supplied with the transportation facilities that we ought to be supplied with. We, as a people producing a first class article, should receive as good a price as our American brethren across the lines who are no better situated otherwise than we are. I don't care very much about the governments of the day taking us by the hand and leading us on and telling us what we ought to do, for I think we can attend to that kind of thing ourselves, fairly well. Our business is to produce largely and cheaply, but when it comes to the question of marketing I think the governments could largely assist in providing better facilities for the marketing and transportation of our products. This is a matter that I think they might wisely and profitably give some attention to. There is no question about it that the low price of our products is largely owing to the fact that during the last decade transportation facilities have increased so largely that the uttermost ends of the earth are coming into competition with us in the British market. Under these circumstances it is well for us to consider carefully the best means of production and transportation, how we can economize in our expenditure, and to stand together shoulder to shoulder in an endeavor to place agriculture in this Canada of ours in the highest possible position, and make this land the first agricultural country amongst the nations of the earth. (Applause.)

COMMITTEES.

Moved by Mr. Dance, seconded by Mr. Beam, that Mr. Campbell, Mr. Murray Pettit and the Hon. Charles Drury be a committee to consider the President's address and report thereon to this meeting. Carried.

(This committee was afterwards changed to Messrs. Campbell, Peart and McKenzie.)

The President then appointed the following committees:

Committee on Resolutions.—Mr. D. McCrae, Mr. John L. Fraser and Mr. Fisher.

Committee on Legislation.—Hon. Charles Drury, A. Kennedy, J. C. Dance, R. W. Gregory, C. Simmons, John Clarkson.

Committee on New Business.—Mr. Chambers, Mr. D. E. Smith, Mr. Murray Pettit, Mr. Raynor, Mr. J. P. Ewing, Mr. Jesse Pawling.

REPORT OF COMMITTEE ON CREDENTIALS.

Mr. Raynor, chairman of the Committee on Credentials, reported that there were nearly 200 delegates entitled to attend, and of that number 136 had presented their credentials. He said that in one or two cases one institute had sent three duly appointed delegates whose expenses will be paid by their local institute. They did it on the ground that in some cases in the report some ridings had three delegates credited to them. That happens in this way, that where there is a riding which elects a member of the Executive Board they have the privilege of sending two other delegates, so it would appear that there were three duly elected delegates from that riding. Now, under these circumstances, I would move that in adopting the report of the Committee, these gentlemen who have attended in that way be entitled to take part in this meeting as duly qualified delegates.

Mr. Murray Pettit: I think that no more than two of those delegates should be allowed to vote in electing their representative on the Executive.

Mr. Ewing: I would second Mr. Pettit's motion.

Mr. Beam: I think if we establish a precedent in that way we may have at our next meeting three delegates from every county instead of two.

The report of the Committee on Credentials was then adopted.

After some discussion the motion of Mr. Murray Pettit, that no institute be allowed more than two votes, was carried; the amendment of Mr. Stewart, to the effect that the third delegates from the institutes spoken of be allowed the same privileges as the auditors, being lost.

The President read a letter from Professor Saunders, of the Central Experimental Farm, regretting his inability to be present at the meeting owing to injuries received by falling on the street; also a letter from Hon. John Dryden stating that he was unable to address the meeting as he had intended doing, as he was suffering from a sore throat.

MUNICIPAL ECONOMY.

Mr. K. W. McKay, of St. Thomas, read the following paper :

Municipal economy is the practical organization of the affairs of a municipality and the adjustment of expenditure to income. This is a broad subject and embraces the foundation of our social and political freedom.

Centuries ago disputes in reference to municipal economy were not unknown in Europe ; after the Norman Conquest, England was divided among the great lords.

The relation of the people to the lords is referred to in that strangely beautiful story "The Cloister and the Hearth," in which Charles Reade has drawn such a vivid picture of human life at the close of the middle ages. There is a good description of the siege of a revolted town by the army of the Duke of Burgundy. Arrows whiz, catapults whirl their ponderous stones, wooden towers are built, secret mines are exploded. The sturdy citizens led by a tall knight, who seems to bear a charmed life, baffle every device of the besiegers. At length the citizens capture the brother of the Duke's general and the besiegers capture the tall knight, who turns out to be no knight at all, but just a plebeian hosier. The Duke's general is on the point of ordering the tradesman, who has made so much trouble, to be shot, but the latter still remains master of the situation, for, as he dryly observes, if any harm comes to him the enraged citizens will hang the general's brother. Some parley ensues, in which the shrewd hosier promises for the townsfolk to set free their prisoner and pay a round sum of money if the besieging army will depart and leave them in peace. The offer is accepted and so the matter is amicably settled. As the worthy citizen is about to take his departure, the general ventures a word of inquiry as to the cause of the town's revolt. "What then is your grievance, my good friend ?" Our hosier knight, though deft with needle and keen with lance, has a stammering tongue. He answers : "Tuta-tuta-tuta-tuta-too much taxes."

The words "too much taxes" furnish us with a clue wherewith to understand and explain the origin of municipal institutions. Many events recorded in history—sieges, marches, deadly battles, and romantic plots—have owed their origin to question of taxation. This issue has been tried over and over again in every country and in every age, with various results. How much taxes shall be, and who is to decide how much they shall be, are always questions of the greatest importance. A very large part of what has been done in making history has been to settle these questions, whether by discussion or by blows, whether in council chambers or on the battlefield. The proper form of municipal government must be that of growth, shaped and determined by our political life, and the example of foreign countries is but little use in helping to solve the problem. Sir Charles Dilke in his "Problems of Greater Britain," says : "The system of local government adopted in Ontario may be looked upon as nearly perfect, and certainly the best in the whole world."

We have in this Province a practical municipal organization, and in considering the question of municipal economy it is necessary to refer only to a few of the details of this organization, and the adjustment of expenditure to income will follow.

In the last volume of Municipal Statistics, issued by the Bureau of Industries, we find in 1890 that $779,028 was expended in township municipalities for roads, bridges and other works ; that these municipalities contributed $67,496 for the support of the poor and other charities, and for schools and education $1,884,569. The total municipal and school taxes collected during the year to pay the above, as well as other municipal expenditure, amounted to $4,563,863.

In the town and village municipalities the sum of $2,232,456 was collected for municipal and school taxes ; $596,594 was expended on streets, bridges and parks, while $40,478 was contributed to the support of the poor and other charities, and $903,108 was the expense incurred on account of schools and education.

In city municipalities taxes amounting to $3,945,508 were collected ; $2,282,089 was expended on streets, bridges and parks, and the support of the poor and other charities cost $123,902 ; the payments of the cities for schools and education amounted to $993,699.

During the same year county rates amounting to $1,312,795 were collected, of which $225,913 was expended on roads and bridges. The administration of justice, goal maintenance, etc., cost $438,453, and the support of the poor and other charities cost $56,678. The grants to schools and other payments for education amounted to $427,510.

When all the Ontario municipalities are considered, the total municipal and school taxes collected in 1890 amounted to $10,741,827 and during the same year interest was paid on $7,414,270, being the amount of money borrowed for current expenses. The sum of $64,132 was paid to members of councils for attendance at meetings and committees; in addition to this the sum of $669,050 was paid to officers and employees under the head of salaries, allowances and commissions. The total expenditure on roads, bridges, streets and parks amounted to $3,883,624, and the support of the poor and other charities cost on the aggregate 288,527.

The largest item of municipal expenditure is on account of schools and education, the grand total being $4,213,856. This is an expense practically outside the control of the municipal councils. The school trustees in making their annual requisition to councils are required to submit the estimates upon which the sums asked for are based; the council may then consider the estimates, and if they are found to be too high, may refer the matter back to the school board with such recommendations as they may deem necessary.

In the township system we have had experience with that form of government in which the people are the only source of power, and municipal independence is therefore a natural consequence.

Statistics show that in 1881 the average rate of taxation per head of municipal population assessed was $3.26 in townships, and that this amount gradually increased to $4.17 in 1892, or an advance of nearly 25 per cent. in ten years.

During the same period the taxation in towns and villages increased 83 per cent, and in cities 122 per cent, the average for all municipalities being $6.18 per head, or an increase of 46 per cent.

A gradual increase of the rate of taxation in townships without any corresponding benefit is, I believe, sufficient to warrant the statement that township affairs are not managed with the economy necessary to inspire the people with confidence in the system. The expense of municipal government in townships, amounts to $275,000 annually. This is not a large amount when divided among the various townships, and the officials they are required to employ.

The expenditure for roads and bridges in townships varies from $600,000 to $800,000 annually, and to this expenditure must be added the amount of statute labor performed. From information collected I am in a position to say that this represents an outlay of $950,000, making an annual expenditure for roads and bridges in townships of $1,750,000—equal to one-third of all taxes collected. It is in the distribution of this fund that the greatest mismanagement exists.

It is not my intention to go into tiresome statistics or endeavor to show that extravagance is rampant in any particular department of municipal control. A municipality is merely a business corporation, the people are its stockholders and the council its board of directors. If as much attention was paid to the management of a municipality as is devoted to a business enterprise of similar proportions, economy in many directions would follow. No business enterprise could afford to change its board of directors each year or intrust its affairs to an inexperienced management.

The present system for electing township councillors, together with the ward system in operation in many townships, is the cause of municipal extravagance or mismanagement. The great bane of municipal government is the ward system. There is no inducement to the ward member to interest himself in the general affairs of his municipality. The idea of a council elected irrespective of ward divisions is the correct one, it enlarges the constituency of a councillor and calls for a wider application of his influence. The aim should be to adapt the public expenditure and improvements without consideration of ward boundaries.

It may be said that the system of electing members of the township council by wards is not in itself objectionable, but when the council endeavors to proportion the annual expenditure equally between the wards, irrespective of other considerations, a serious fault leading to extravagance is the result.

The township is a small enough unit for local government. It is impossible to find a township the four wards of which require the same amount of money each year. Then again there is a great difference of opinion as to how much money should be expended. Some are inclined to be economical and others the opposite, and the result is that each member tries to get the lion's share. A councillor who by manipulation succeeds in securing this is sure of re-election; the ward is his first, last and only consideration. On the other hand, in a council elected by the whole municipality, the members are not interested in any particular section, but each receives what its actual requirements demand.

If the ward system is to be continued, the road expenditure of the whole township, not including the cost of bridges, should be raised annually in the wards in which the money is expended. Under the present system of election, township councillors do not have an opportunity to display their ability to carry on municipal work in an economical manner. This could easily be remedied by extending the term of office of township councillors. School trustees are kept in office for three years, one being elected each year; the result is that experienced men always form the majority. In the townships if the reeve and one councillor were elected each year—the councillors retiring in rotation—experienced men would always be found at the council board. Municipal office would then be accepted by many who object to the annual election. Road and bridge improvements, which now cost one-third of all taxes collected, would be carried on in a uniform manner. A new member with ideas would have men of experience to advise him, and an economical management of every department of the municipal service would be the result.

It will be admitted by all that the same reasons advanced for a change in the township council system are applicable to the county council, the business of which should be transacted by experienced members. It is rather misleading to say that the business of county councils is to be judged by the amount of the controllable expenditure. It is their duty to keep the uncontrollable expenditure within reasonable limits.

In many cases the greater portion of the county rate is for works and other debts contracted by former county councils, and it is to prevent a repetition of these expenditures that experience is necessary. In addition, many questions not of a financial nature are brought before the county councillors for discussion.

In the past we have heard considerable about the necessity of reducing the number of members of this body. Statistics show that in the whole Province the amount paid for the attendance at meetings of councils and committees annually is $64,000.

Statistics do not show how much was squandered or the expenditures occasioned by lack of experience or mismanagement; the fact is that county expenditure has increased about 12 per cent. or $300,000 per annum during the last ten years.

One of the arguments against the reduction of the members of the county council is the great advantage derived under our present system in training men as legislators or to fill other important public offices through the medium of our county council. At the present day the necessity for educating men in public business at the public expense, for it is expensive, is unnecessary. If such a necessity ever did exist, we should now look forward to a change as the result of our education system and the influence of the press, a medium through which every ratepayer is kept well informed as to the duties and responsibilities of their representatives in the municipal councils. Many years ago actual experience in public life was considered a necessity to the attainment of this knowledge.

The benefits that would accrue to counties by having the members of the council elected for a term of three years, can only be estimated by those who are in a position to point out the many important matters that new and inexperienced members overlook. In suggesting a change in the present mode of election of county councillors, it may be as well to refer briefly to county council systems to be found elsewhere. The number of county councillors in the English counties is very large, the members are composed of two classes, councillors and aldermen ; the latter always number one-third of the former. The largest council contains 140 members, the smallest 28, with an average of about 75. The councillors are elected by the qualified voters of the county and hold office for a term of three years, and retire in rotation. The aldermen are elected by the councillors either from their own number or from the qualified voters outside, and hold office for six years, one-half of their number retiring every three years. For the election of councillors the county is divided into electoral districts, corresponding in number to the number of councillors, one councillor being chosen from every district. The boundaries of these districts may be changed by order of the Local Government Board, on the recommendation of the council. The Local Government Board is, in form, a committee of the privy council. It is a separate and independent department, under the control of the President, and may be called the English Department of the Interior. It is charged with the supervising of the administration by the local authorities of the kingdom, of the laws relating to the public health, relieving the poor and of the local government, duties more important to the daily government of the country than those of any other department. From the English system we can draw but little information that would assist us in proposing a plan for the reduction of the members of councils in Ontario. The division of the counties into electoral districts has been found to be necessary and more so as the township system, which has been generally adopted in this continent, has been rendered unnecessary by the many irregular and complicated divisions into which the country is divided. In the United States, the county and township system has been adopted throughout. In Michigan, as in New York, and other states, the county board is composed of the supervisors of the several townships, and thus represent the townships. It is held that this is the most improved form of local government; but, on the other hand the objection is made that county boards, thus constituted, are too large. In the states mentioned there are no less than sixteen, and sometimes more than twenty townships in each county, and in a board of sixteen or twenty members, it has been found hard to fasten responsibility upon anybody in particular, and that it was possible to have combinations and indulge in that exchange of favors known as "log rolling." The responsibility is more concentrated in the smaller county boards of Massachussets, Wisconsin and other states in which three commissioners are elected by the people for a term of three years, one retiring each year. For the purpose of electing, the counties are divided into three districts, and a commissioner elected for each by the voters in the district. Districts are composed of townships, and in dividing the county into districts the population of the townships is considered. Here we find two systems, one in which the number of members of the county council is found to be too large, the other in which the number of members is fixed at three, and for this purpose the county is divided into districts. An American writer states, "It is objected that the supervisors, (reeves and deputy reeves under the Ontario system) are unable to conduct county affairs as speedily and intelligently as the commissioners. The number it is asserted is too large for the transaction of fiscal and other executive business requiring special consideration and special knowledge, and it must be confessed, whatever may be the countervailing advantages of these more democratic organizations, that this objection is sometimes a very serious one, particularly when a county contains within its limits a city or large towns entitled to representatives on the board." It is contended that the work done by large county councils could be done more satisfactorily by a smaller body, and that much of the county expenditure is practicably uncontrollable and the expenses of the councils quite out of proportion to the amount that they may dispose of at their discretion.

A great deal has been written as to the best means to adopt to effect a reduction of the number of members of county councillors so that it will be representative. Mr. McEvoy, in his essay on the Ontario township, refers to this question as follows: "In order to bring the observation of county business home to the electors, it would be well to elect a county council independent of the township council. Let the electors of each municipality nominate candidates for county councillors at their township nominations, and let the township clerks return these nominations to the county clerk, who shall be ordered to prepare ballots containing the names of all the candidates nominated throughout the county, and send whatever number of these may be needed to each township clerk before election day. When the electors come to vote for their township councillors let them also vote for their candidates for county councillors. Let a statement of this vote in each township be forwarded to the county clerk, and let the fifteen who obtain the greatest number of votes constitute the county council." By this means every member would represent not any particular township, but the whole county. The members would, I submit, be as likely to do justice between the several townships as those chosen on the present plan.

One objection to the present system is that villages are increasing, and that village and town representatives almost outnumber township representatives in some counties. There is also an objection owing to the fact that many villages which when incorporated had attained a sufficient population would not now fulfil the requirements necessary for incorporation.

The Act makes no provision whereby a village becomes part of the municipality from which it was first taken. The result is that very many village representatives in our county council represent constituencies, half a dozen of which would not furnish the qualification necessary for a deputy reeve in townships. The proportion as to population, equalized value, or number of voters shows that this is not an equitable arrangement. There is an objection to raising the number of voters necessary for a deputy reeve in townships above 500, as the inequality of representation would then be greater than at present.

The controlling body must be composed of men of experience if we are to have an economical adjustment of public expenditure, and we can only obtain this by reducing the number of members of the county council. How small they should be I am not prepared to say, but in no county should the county council be composed of more than nine members, and as a plan of election I would suggest the following as being more in accordance with our representative system than the present method: Divide each county into districts composed of polling subdivisions or of local municipalities, so that each district will contain about the same number of voters, and elect three district councillors for each independent of the local councils, for a term of three years, to retire in rotation. If this plan is adopted we would have an experienced body of men to control county business, they would be independent of township councils and would not be influenced by local considerations.

Underneath all the remedies that may be suggested for the better government of any municipality is the doctrine, that all their affairs must be conducted on sound business principles. The first is to place these affairs in the hands of an experienced board of management. The second, to secure an efficient supervision or audit of financial transactions. I have pointed out how in the township and county municipalities those experienced members may be secured, and in conclusion will offer a few suggestions in reference to a system of auditing municipal accounts which if carried out would assist largely in improving our system of municipal economy. For many years the complaint has been that municipal audits are inefficient. The numerous defalcations of municipal treasurers and collectors reported from time to time show this, and in addition the report of the Bureau of Industries shows that a uniform system of municipal accounts is actually necessary. To secure this I would propose the appointment in each county of an auditor. The duties of this auditor may be briefly outlined as follows: 1st. To be *ex-officio* auditor for the county and all local municipalities therein, to act with an auditor to be appointed by the county and local councils in the yearly audit of the treasurer's books. 2nd. To check over each local treasurer's cash account and verify balance on hand at least once during the year. 3rd. To furnish the Bureau of Industries, as required, with statements of the finances of his county and local municipalities. 4th. To enforce such regulations as may be necessary to secure a uniform system of municipal accounts. 5th. To make such recommendations to the council as he may deem advisable, and in a general way to have the supervision of financial transactions of all municipalities.

It may be claimed that there is an objection to the appointment of an additional official on account of the expense. Only a portion of the auditor's time would be required, and the cost of his services would not amount to more than one-half the cost of our present audit, after the first year, when I would expect all treasurers' accounts to be kept on a uniform plan. This would greatly facilitate the work of the auditors.

The fact of having the financial transactions of the municipality performed in a business way would be true economy. An efficient man would be required to fill this office.

The auditor should be independent of the council. His duties should be regulated by statute. He should be appointed by the county council, and after being three years in office a two-thirds majority of the whole council would be required to dismiss him.

The tendency of the present time is to centralize the supervision of the financial affairs of municipalities. This would result in a system in which the smallest number of minds, and those knowing the least, and having the fewest opportunities of knowing about the special matter in hand, and having the smallest interest in its well working, have the management of it or control over it. We would advocate on every hand reforms that will preserve our municipalism, so that the greatest number of minds, knowing the most and having the fullest opportunity of knowing about the special matter in hand, and having the greatest interest in its well working, will have the management or control of it.

Mr. HOLDEN: The reader of the paper just now stated, and I believe correctly, that the principal municipal expenditure is on account of schools. Now, I think it is the intention at all times in each and every municipality to let each person pay an equal amount of taxes for an equal benefit. I find that in our riding the amount of money paid out by the different school sections varies greatly, at least the rate for the same kind of work varies greatly. In other words, the school sections are not divided equally, and the consequence is that parties living in a school section which is comparatively small are obliged to pay a comparatively high rate, while in other sections which are large the rate is small. Now, as I understand, the object of this meeting, or part of its object, is to procure legislation which will be favorable to us as a whole. The Legislature to a certain extent some time ago did equalize this by compelling a township to collect $100 for each school section within its boundaries. With the consent of this meeting, I would move that the Legislature be applied to to increase this grant, or to compel a township to raise a larger amount than $100 for each school section. Where the school sections are already equal it would work no injustice, nor any change. Then there is another subject I would like to draw attention to. Mr. McKay seems to consider the ward system an evil. Now, the ward system has been adopted in our municipality. Before the organization of our township of Sandwich South, the townships of Sandwich East and Sandwich South comprised one township. We elected five councillors by the township at large, and in the expenditure of the money raised for roads, bridges, etc., the township was every year divided up between the five councillors, and each man had to look after his particular tract. Now, why is it not just as good to have it divided into wards and let each man have a well defined tract to attend to? The only difference I can see is simply in the election of the council

Mr. MORRISON: I think school moneys should be paid in the same way as township rates. In our township we have sections of from 3,400 to 5,900 acres, and in the large ones the taxes are not over half what they are in the small ones, and very often they don't have to pay as large a salary. I think that if $200 were raised instead of $100 it would equalize the thing pretty well. I like the township boards, but we cannot get people to like them at present, although a great many think it would be better. When we have so many trustee boards we can't get them all to hire teachers at an average rate. As regards the ward system, our township has that too, and it is a great deal of trouble for the people to lay out wards. Every year there is trouble, especially in the election of the deputy reeve. The council has to elect the deputy reeve, and there are hard feelings, for sometimes the man that was elected deputy reeve by the council would not be elected at all by the people. Then suppose a man had land in two or three wards, he could vote for two or three councillors. If there were no wards at all every man could vote for the five councillors. I approve of what Mr. McKay said about having some of the council remain for three years. There is another question we might take up. I think that there should be a clause added to the Drainage Act saying that by-laws should be registered. It would be very easy to add one clause to it, and it might save a good deal of expense some time. The same with the School Act as to debentures. Another thing in the School Act might be changed a little is as to compelling children to attend school. As it is now it says no child shall be compelled to go to school under ten years of age over two miles and a half, and the Act also says that no school section shall be formed over three miles in a direct line. Now, a child might have to go four miles and yet it would be only three miles in a direct line. I think it should be so amended that no child would have over two miles and a half to go, and that a man could send his child to the nearest school independent of where he paid his taxes.

Mr. G. A AYLESWORTH : With regard to the grant to township public schools, we are all aware that the Public School Act as well as the High School Act was revised and consolidated up to date in 1891. I believe that since then the clause was added making it necessary that every public school in the township should receive at least $100 from the township municipal fund. There is in existence an education association composed of trustees and representatives from the various school boards throughout the province. It has held annual meetings, and the Minister of Education generally attends. He seems to pay great attention to the discussions and to the results of these discussions. At the meeting last April this very matter was discussed, and a recommendation went up from that association asking that the limit be raised from $100 to $200. That was the minimum limit. It is already within the power of any township to grant more than $100 if it sees fit. The Act is permissive in that direction. The recommendation was delivered to the Minister by a committee, and I believe that either in the present session of the Legislature or the one of next year at the latest that recommendation will be endeavored to be placed upon the statute book, brought in as a Government measure. I might say further that the Minister of Education told the Association that he thought the school laws of this province might well be left unamended and unchanged for periods of five years, and that in the meantime the working of those laws should be closely watched by all interested, and amendments offered, and they would all be considered *en bloc* at the expiration of the period. That period will expire at the next session of the Legislature, and we may look for a full revision of the school laws at that date, so that any amendments suggested which are brought before the Minister of Education and the Legislature previous to that date will very probably find a place ultimately, if they deserve it, upon the statute book, and any that come in after that revision may have to wait a period of another five years.

Mr. WHELAN : I appreciate municipal economy ; I have always done so. I think it should begin with the Senate and go down to the lowest office in our gift. I would make a regular sweep all the way down, including grand jurors, including the county council, and the officers all the way down. But speaking about county councillors, there are three or four ways of managing them. Now, if a township is large enough to send three county councillors it might be prudent and proper to only elect one and give him three votes. That would reduce the expense of three men down to one, and I would carry that principle all the way down from the Senate to the lowest office we have. What we want to-day is something to decrease the representation in our legislative bodies.

Mr. JEFFS : We have fifty-seven members in the county council of the county I am in, and about twenty of those men do nearly all the work, and I am desirous that some action should be taken to reduce the expense of the county council.

Mr. CLARKSON : An effort was made some years ago to establish township boards, or permission was given to townships to establish township boards for schools. That totally failed ; very few townships ever took it up. Then the Government took up this plan of compelling townships to contribute a certain sum towards education. Now, this is just the entering wedge of the township board system, and the suggestion that is made to increase the grant from $100 to $200 is simply driving that wedge a little further. I believe if the township board system was acceptable to the people they would adopt it when it was permitted, and if they don't we can safely come to the conclusion that the people do not approve of the system. I think it would be wrong on the part of any government to endeavor to coerce the people either wholly or by degrees in the adoption of such a system. Allusion was made to the registration of debentures and the suggestion offered that there should be tacked on to the Drainage and School Acts a clause requiring them to be registered. That would simply be a repetition of legislation. There is a Registration Act which requires that all such debentures should be registered to make them legal, and if township clerks and other officials don't take the trouble to acquaint themselves with their duties they should keep quiet. There is no necessity for tinkering legislation simply because people are negligent. Then as to the ward system, exception has been taken to the present system so largely in vogue in this country, if electing all the councillors by all the votes of the people. There are evils in connection with this system we admit; there is a tendency in certain parts of a township to bring out a man and vote what is known as "plumpers," that is while they have the privilege of voting for three or four men they will only vote for one. Now, that, although not a regularly organized ward system, is practically the ward system after all. There seems to me to be one remedy for this, and that is compulsory voting. If there are four councillors to be elected, compel every man to vote and to vote for four, and then the council will be the representatives of the entire municipality.

Mr. Lawrence: I am from Simcoe where we have fifty-seven gentlemen sent to represent us in the county council. Now, why should we send fifty-seven men to Barrie to do the work of—Mr. Jeffs said twenty; but I am told that three or five men would do the work in our council much better. You know what the result would be. It is high time that we should look after these things. In olden times, perhaps, these county councils were all right, but now it is a thing of the past, and it is for us to introduce a new and improved system. It would be very silly-looking for me to start reaping my harvest with a reaping hook when I have a self binder; and I consider that the municipal system we have now of sending fifty-seven men to do three men's work is just as far behind what might be done as the reaping hook is behind the self binder. It is for us to tell our representatives in Parliament that we must have a different system. Then I like the idea of having these parties put in for a number of years. We are training these men all the time, consequently we want to keep a good man in when we get him. Even in the old road work system changing pathmasters every year was a great mistake. We must get rid of the old county council; it is away behind the times. They follow the old groove and the wheels can't get out of it, consequently anything will do at all. Now we want a change. Our money is fairly wasted in roadmaking and all these things, and it is for us to get up and speak our minds freely and boldly. I think three or five men would do the business far better than fifty-seven men, and it is economy we are after.

Mr. Campbell: Regarding the school system, I would not be in favor of that centralizing board. I think there should be as much power as possible in the board of school trustees. Even with the $100 raised they would not be as economical I believe as if it was all raised within the section. Then as to the ward system, it was mentioned that you could not get out of the system, that they put in plumpers; but how are you going to find out the culprit? How are you going to tell if a man does not vote for the whole four? Then, as to the election of councillors for three years, I believe people know best who they want to represent them, and I believe the people elect who they want every year. If you elected a bad man for three years you would have a white elephant on your hands. However, I don't think this matter can be intelligently discussed without sending it to the Legislative Committee for their report, and then have it discussed clause by clause.

Mr. Dalton: I think the suggestion in the paper to have the county council composed of three or five men would have some disadvantages. In making changes we must be a little careful to make them in the right direction, and while I am in favor of municipal economy I don't think it would be wise to make a change along that line for this reason, that there is nothing to prevent the three county councillors from being all elected in our county towns. As it is now each municipality sends its own representative. I believe we send too many, but I think every township should be represented even though it costs a little more money. Then it divides the council up politically, whereas in the plan proposed they might all be of one political stripe. There would be a disadvantage, and I think the change would certainly be in the wrong direction. Then I don't think it would be much improvement to have them elected for three years. If you put in a poor man, one year is quite plenty; but if he is a good man we can go on and hold him there. As it is, in many instances men stop in the councils fifteen, twenty and sometimes twenty-five years, so that the people are the best judges of who they want. I think, however, that there ought to be some system by which we could reduce the number of our county councils. My own opinion is, as has been suggested here, to give the reeves in each municipality the votes in proportion as they are now distributed among the deputy reeves. I believe in our own township the interests of the township would be fully as well looked after if the other deputy reeve and myself stopped at home. Then I don't believe it would be wise to ask the Legislature to force a township to grant $200 instead of $100 to the schools. It would have a tendency to increase extravagance rather than to have economy practised. Each township now has the right to pass that law if they see fit.

Mr. Irwin: In reference to the additional grant to schools, is it not possible that in giving that grant we may be doing an injustice to some parts? Those living in large sections now suffer a great injustice from their children being a great distance from school. They may have more taxes in small sections, but they have not nearly as far to go. There are a great many townships with villages within their bounds, and the amount which the village resident pays in taxes is very small indeed compared with what the farmer living a great distance from the school pays, yet his children are enabled at all times to reach school even in the very stormiest days, and he is not obliged to waste time taking them to school as the farmer has to do. I know in the section in which I live the villages not only get their regular share but they also come in for a larger share of the two grants, legislative and municipal. They are enabled to keep their children at school at all seasons of the year, whereas the farmers living in large sections and at a distance from school cannot have their children attend so regularly, and consequently they suffer a loss from these two grants, so that by increasing the grant to $200 you punish them doubly. They are living a long distance from school, and they have to put their hands in their pockets to educate their neighbors' children who are more favorably situated than they are now.

Mr. Mowbray: This is certainly a very important question, but so far as we have gone none of the gentlemen who have spoken, outside of the reader of the paper, has proposed a new scheme of any sort. As regards the three years' system, I certainly think, as an old municipal councillor—I was some twelve years at that—that it would be a good thing. It is very often difficult to get good men to go into municipal politics on account of having to face an annual election. Now a good man might have some particular scheme to work out which he cannot do in one year, but at the end of the year he may be driven from office under our present system. I think that change could be adopted fairly well. With reference to the county councils, I think that the amount of money you spend on county councils is very small, and the losses you suffer from them—well, I don't think you lose anything. There is one thing, however, in reference to county management that I think might be improved upon and that is as regards auditors. In the county of Ontario we have been rather unfortunate in having had two defaulting treasurers. I think that if the Ontario Government would take the power of appointing county auditors into their hands and send expert accountants throughout this province it would be money well spent. You all know how these auditors are appointed at present. The warden of the county has one appointment, and who does he appoint? The best man? A good accountant? Not by any means. He appoints some particular friend of his, perhaps some fellow who worked hard for him during his election. In discussing this question with members of Parliament they say that the cry would go out that the Government was trying to centralize their power—that they were taking too much power away; but I think it would be a good thing. In regard to these county commissioners, that scheme might possibly be worked out; but one of the gentlemen who has spoken has said that it was better to have each township represented, and I think it is too. If we are going to elect three or five county commissioners what would be the result? Party conventions on each side would be called and a straight ticket nominated on each side, and we would have our party fight every year. I think that would not be desirable. With reference to the $200 grant, we have virtually got that power to-day. The Municipal Act says distinctly that the council shall collect not less than $100 for each school, and not less than $50 where an assistant teacher is employed. Now I think the municipal council elected by all the people each year are in a better position to know how much money to levy annually than perhaps we are here. I think that is a matter that might be safely allowed to rest where it is. It is perfectly safe to trust the people of this Province with this matter, and if there is one thing above another that I have noticed it is this constant tinkering of the Municipal Act. I think I am safe in saying that perhaps seven-tenths of the members of the Legislature have been old county councillors, and nearly every man of them wants to let his constituents see that he is doing something by trotting in some little bill to amend the Municipal Act. Now, for goodness' sake, just let us give the Municipal Act a rest for a few months.

A MEMBER: Speaking from experience in our section, I don't think there has been any Act in regard to the school law that has met with more general approval than that making it compulsory to levy $100 for each school. I was hoping at the time that it would be made $150 or $200, and I would rather support that even at the present time, because in the township I live in we are in a very difficult position in this matter, for some sections have four times as much land as others. I think if it is left merely permissive the township councils would never levy the $200.

Mr. MORRISON: I think if any council would pass a by-law to raise $200 they would run the risk of being put out; but if it was made compulsory I don't think there would be a kicker.

Mr. A. L. BOYCE: In the township adjoining ours they have what is called a board. Each school section sends in a school trustee as it were, and they have a man appointed as secretary-treasurer. The whole township is assessed to pay the teachers. The municipal grant comes in and it is divided, no matter where the children go. They go to the nearest school, and the schools are so arranged as to convenience the township as best they can. If a schoolhouse burns down the whole township is assessed to build it again. In that way a poor section has the same advantage of a good teacher as a good section, and it works very satisfactorily. Each trustee has a say as to who his teacher will be.

Mr. KERR: This school question has been pretty well thrashed out now, and I think it is the turn of the grand juries to be thrashed a little more than they are. We have been giving the county councils a good thrashing, and they need it, a good many of them. I quite approve of the suggestion to give one man even five votes if his municipality was entitled to them. In our county just a few men do all the business. Then I believe in keeping good men in more than three years when they are there. As for grand juries, I say abolish them. The work they do when they bring in a true bill has just got to be done over again by the petit jury, so that it is a useless expense.

Mr. McCOLL: I think there would be a good deal of dissatisfaction if there was an Act passed to raise the grant to $200. There is dissatisfaction at present in some sections which pay more than their share of the $100, and have not perhaps more than eight or ten scholars. They claim they are suffering an injustice because they are receiving no grant and at the same time paying the $100, while other sections which are receiving perhaps $60 or $70 of Government grant don't pay $100 and have got two teachers. With regard to the ward system, we have had some experience in that, and the majority of people in our township believe it is a failure. We put a man in the council who has perhaps never done a job on the road in his life; his object is to keep himself in power as long as possible, and he expends money wherever he can make the most votes by it, whether it is in the interest of the township or not. I think the fairest way of all would be to pass a law that no township council should have the spending of the money on roads. I would have one man elected by the people as commissioner for the township, and let him spend the money granted by the council for the benefit of the whole township. As to the number of county councillors, one strong objection to a reduction of the number is that under the present system nearly all the work is done in committee, and almost every member is on some committee, so that they are all doing work, and it is only ratified before the whole council, so the work is really done at as little expense as it would be where there were only three or five commissioners to do it.

Mr. Roy: With regard to the appointment of auditors, we have never had one cent go out of place in our county, and I think that we can appoint just as good men to look after our interests as the Government can. I am only sorry that Mr. McKay did not go a little further with regard to our assessment system. The assessor goes around every year merely copying the old roll from year to year. I think if we could adopt some system whereby it could be done every four years by two good men it would be a great advantage and would also save money. If there is a change required to be made by anybody he can go to the clerk and have it done.

Mr. Honey: We have been thrashing at the county councils, but why not begin at the root of the tree? This gentleman who has just spoken referred to the assessors. In our township we pay about $70 a year for an assessor, and he goes over the township in the winter when perhaps there is two feet of snow on the ground, and there are a lot of them who really know very little of the value of the land. My idea was to have the assessor go through once in three or four years and let him do it in May or June or September when he could see the soil. I venture to say that I have stones on the rear end of my place that no assessor has ever seen for the last ten years, still they assess this property. Then considerable expense could be saved with regard to the collector. He gets $75 or $80, and there are nine-tenths of the parties go to his office to pay their taxes. He has got to look after, as it were, the loose fish. Now, the treasurer could collect that money, and if there were a few hard cases to collect from the sheriff or bailiff could look after those. We could at least save $50 a year in that way.

Mr. McKay: I have listened with a great deal of interest to this discussion. Probably you did not catch the figures I referred to. Township taxes as a whole amount to about $4,600,000, and during the past ten years they have increased 25 per cent. so that at present they are $1,200,000 more per annum than ten year ago. Now, if the township system is satisfactory and economical, leave it as it is. But I was led to believe in looking over a report of the Bureau of Industries that an increase of 25 per cent. in ten years in township council, and 12 per cent. in county council expenditure, amounting to $1,500,000 annually, was an increase which could be greatly reduced if those bodies were composed of experienced men. The plan I have suggested in reference to county councils was suggested by the system under which school trustees are elected. If any other plan were suggested whereby experienced men would be on the board I would be entirely in favor of it. It has been stated that if a bad or extravagant man is elected under the present system he can be turned out; but you will understand that under my system that two men could be elected each year, and a man must be very bad indeed if he can control a majority more than one year. I don't see that there can be any objection to the proposal I made as to election for more than one year. If the change I propose were adopted the oldest members of the township councils would compose the county council, and that would give an experienced body always—that is if the county council system was not changed. With reference to the grant of $100 to each school section, a subject I did not touch on, you have to pay the money no matter how it comes, and I think it is only shifting a responsibility from the councils to the Government. Trustees are apt to be extravagant. They go to their school meetings and they say, "Well, we have got $200 or $300 from the township and we have only expended so much" when the question comes up, and in that way the ratepayer might make some objection and say that the taxes are too high, but they would say the Government is the cause of it. Then if you go to the Government and say that the taxes are too high they would say, "Gentlemen, you asked us to do it, and that is the cause of the high taxes." I believe the system of auditing that I recommended is one that should be adopted. This auditor should be placed in the same position as the school inspector is now. He would be independent, he would be experienced, and for sufficient cause, on the vote of two-thirds of the council, he would be liable to be removed at any time.

Mr. JAMES SMITH : One of the largest items in municipal expenditure is that upon public highways, and it is also, I believe, the most wasteful. Would you just give us a few hints upon that?

Mr. MCKAY : Probably, as some of you know, I am interested in the Good Roads Association, and we meet at the close of your meeting. If you are in the city on Thursday afternoon we would be very pleased to have you come and take part in it.

Moved by M. C. BOGART, seconded by J. D. EDDY, that the very able and interesting paper of Mr. McKay be referred to the Legislative Committee to bring in a report to this convention recommending such economic legislation and municipal reforms as they in their wise judgment deem prudent. Carried.

The PRESIDENT : It has been found necessary to make some changes in the committees appointed. The committees will now stand as follows :

The Committee on Resolutions—Mr. McCrae, Mr. Thomas McMillan and Mr. Alexander Peart.

The Committee on Legislation will remain as it was.

The Committee on New Business will be Mr. T. G. Raynor, chairman ; William Ballantyne, A. J. C. Shaw, Murray Pettit, J. B Ewing and Jesse Pawling.

The PRESIDENT : There is a gentleman here who has been very much interested in the export of cattle and can give considerable information as to the export of dead meat, Mr. J. T. Gould.

Moved and seconded that we now hear Mr. Gould with regard to the marketing of live stock.

Moved in amendment and seconded that Mr. Gould's address be deferred until this evening.

Mr. STEWART : I understand that Mr. Laurier is to speak in the city to-night and I would move in amendment to the amendment that when we adjourn now we stand adjourned until 9 o'clock a.m to-morrow. I am a farmer and a Conservative, but I would like very much to hear Mr. Laurier.

Mr. BEAM : I think it would be a great mistake for this meeting to adjourn for any political cause. We should attend to our own business. Last year there was a motion made to adjourn on account of a temperance meeting and that was voted down, and I say we should vote this down, too.

The amendment to the amendment was then put and lost, the amendment being carried.

The meeting then adjourned.

FIRST DAY—EVENING SESSION.

The meeting was called to order at 7.30, the President in the chair.

OUR CATTLE EXPORT.

Mr. J. T. GOULD, American agent for the firm of Poels, Brewster, Ramsden & Duckham, salesmen of live stock, London, Eng., then addressed the meeting as follows: I can assure you that it affords me a great deal of pleasure to meet the farmers of Ontario. On coming from the train this morning I met a friend who spoke of this meeting, and I thought perhaps if I came up here I might be the means of giving you some information in regard to the cattle trade. My object is the furtherance and the promotion of your interests and I shall be pleased to answer any questions so far as I can pertaining to that trade. I take it that you all regard it as one of the most important trades we have, both the sheep and cattle trade. Our outlet, as you know, is England, but unfortunately the embargo which prevails at present militates very much against the trade. Steps have been taken from time to time with a view to the removal of this embargo, but without success. The people of England contend that we have contagious pleuro, but which, so far as I have been able to see, has failed to manifest itself. Your representative, Sir Charles Tupper, has combatted that idea in England and elsewhere very forcibly and successfully so far as any evidence or trace of the disease can be found in Canada. While in England about three weeks ago I met the inspector at Liverpool and had a lengthy conversation with him upon the subject. I said it appeared very strange to me that he should find cases of contagious pleuro, and when we go to the herds from which he said you find them, there is no trace of the disease whatever existing there. It does seem to me that he must be astray in regard to this matter. However, Mr. Gardiner, the Minister of Agriculture, whatever his motives may be I don't know, calls to his aid experts upon whom he is obliged to rely for advice, and of course it would not be proper for him to take advice from any but his authorized advisers. You know a man is very apt to find what he is anxiously looking for, and it does seem to me within the range of probability that the people of England know full well that we have no cases of contagious pleuro here, but they don't want to see our cattle in the interior markets where they come in direct competition with their own. The aim is that if they can confine these cattle to the water side, that is to the places where they have to be slaughtered within ten days, they can keep this trade from coming in direct competition with their own cattle in the interior markets. I do think, with all respect for Mr. Gardiner and his veterinary advisers, that it is promoted more from the desire to keep our cattle from coming into competition with theirs than from any fear of contagious pleuro. An effort was made last fall to open up a trade with Belgium in Canadian cattle. A number of cattle were shipped there. In Belgium our cattle were subject to no restrictions, they passed free after three days' quarantine. There is a small duty upon them, but which really does not prevent their being marketed at a profit. This firm marketed some cattle there and succeeded in making a very fair profit, but unfortunately in the latter part of the season one consignment met with very severe weather on the way and upwards of 200 bullocks were killed and thrown overboard. Now, it appears to me, that in this severe weather the cattle take a cold which sets up a species of lung disease, and upon the arrival of the cattle the lungs are in an inflamed condition, and that has been mistaken for contagious pleuro. However, in Belgium they got the idea that our cattle were afflicted with contagious pleuro and they passed a provisional order stopping the importation of Canadian cattle

The possibility of exporting Canadian cattle to France has been spoken of. Now, these cattle go there under certain conditions; the exportation is hedged about with some difficulty. You must have a consular certificate by the French consul; they have to be examined by a veterinary here first, and then a consular certificate as to their being free from contagious disease, and there is a much larger duty in France than in Belgium. Whether or not that trade will prove to be one advantageous to the people of this country it is as yet difficult to say. However, it is worth trying. It was tried last year, but as to the success of it I could not speak positively.

I heard something said in regard to the Canadian dressed beef trade this afternoon, with the hope that it might be a success. I would be very much pleased indeed to see it a success, but I have very grave doubts about it, for this reason: This trade is in the hands of men of unlimited means, like Mr. Armour of Chicago, and they are determined to keep everybody out of it that they can. They have immense wealth and very extensive plant in Chicago for the utilizing of everything in connection with the animal, which give them facilities that our people have not got, and the moment you attempt anything of that kind from here they will, as they invariably do, attempt to crush you out, and undoubtedly, from their superior facilities for carrying dressed beef, for purchasing it, and in other ways, they will be able to swamp you. I have no expectation of the Canadian dressed beef trade ever being a success unless some unforeseen circumstance should take place which does not now exist. Many of you, I presume, have been in Chicago and have visited the cattle market there and know its extent, and the different varieties of cattle there marketed. They have all kinds of cattle; cattle for canning purposes, cattle for dressed beef purposes, cattle for export purposes, and so on, and these wealthy dealers will buy the whole of these cattle simply from the fact that they can utilize every one of them. Now if you went there to pick out of a man's cattle those suitable for export or any particular branch you would have to pay exorbitant prices. Then again these people who have been at this business for years have on the steamers plying between New York, Baltimore, Boston and these American ports, specially fitted up refrigerators for this purpose. They hire these chambers and pay so much for them, and being large shippers they can get them at reduced prices to what you could here in this country. Then you would labor under another disadvantage in that respect. These men have on the other side their business established. They have their shops there, and this meat is placed in the hands of their managers and sold throughout the different towns in England. The result is it takes a great deal of time, a great deal of money and a great deal of experience to build up this trade and compete with these people. Their motto is to crush everybody else out of the trade in that way, and I have no doubt they will succeed.

Now, your system of agriculture here, I take it, will have to undergo, and perhaps is at present undergoing, a certain change. The growing of grain for the purpose of selling it I think is played out, and if a farmer is to succeed and keep up the fertility of his soil he must turn all his coarse grain into beef, mutton and pork. In regard to the arrival of the cattle in England, they have, as you know, to be slaughtered within ten days after their arrival. The result is that they have to be sold and the meat is shipped to the interior towns and it arrives in a condition that is somewhat mussy. You would at once know that it was not freshly slaughtered beef just hung up. The advantage that a dealer had in buying cattle on their feet over there when they were free from the embargo was that he could take them up the country wherever he wanted them, and they were killed just as the market would take them. He was master of the situation. He had his customers, and if the cattle were of good quality, fat, nice cattle, they often could be sold as English beef. Now the dealers know that you have got to sell them and get them out of the way within ten days, and oftentimes you have to sell them at a sacrifice in order to get out before the expiry of the ten days. That places you in a tight place, and of course the loss has to be met by the parties who raise and feed these cattle.

If any of you wish any information as to how these cattle are handled or anything like that my business is to give you information.

A Member: What do you think the prospects are for cattle next spring?

Mr. Gould: I think the prospects for good, well finished Canadian cattle in say May, June and July, before the English and Irish grass cattle come in, are fairly good. Of course the great competitor in the interior markets is Ireland. They ship more cattle to England than the United States and Canada put together twice over, and last year they shipped over a million sheep. You think in Canada that it was a great sheep year, that you shipped a great many, but the fact of the matter is you did not ship one quarter of the sheep that came from Ireland. In reference to the frozen mutton that comes in such immense quantities into England from all parts of the world, it only comes into competition with yours in regard to the lower class of people. The class of people who eat this meat is the poorer class in the large cities. This freezing process seems to take out of it its natural juices and flavor which make it so palatable, and it is more like, as you might say, chips, comparatively tasteless, and is sold at a very low price. Now, I am in communication with the markets in England weekly, and I have received a quotation as to the prices last Monday, or yesterday, and the price has gone off. The weather there affects the trade very much. Canadian sheep would be worth about 6½ pence to 7 pence a pound, depending upon quality, and then ¼ of a penny off long wooled. Canadian lambs sell remarkably well at this time of the year; if well fattened and finished they are worth now from 7½ to 8 pence a pound. These are remunerative prices, and we look for still better prices later on. The South American trade is quite a factor in the sheep business. They are of a very superior quality, all wethers, and much nicer than ewes. Unfortunately the sheep from this country are principally ewes that have had lambs; they are sucked out, and the meat has not got that nice juicy flavor which mutton from a nice, well-fatted wether has. That is the reason South American sheep command a better price than yours now. It is midsummer there now and the sheep are coming in in large numbers; had it not been for this the sheep would have been a much larger price than they are now. You have all the elements here for making the very best beef and mutton in the world.

Mr. JOHNS: Have we disease among our sheep?

Mr. GOULD: Yes, in the eastern townships I am sorry to say they have the scab, and we labor under a great disadvantage. A great many of our sheep have been condemned in Liverpool this season. But in Ontario I have never seen any scab, and I have been in this business for over twenty years. The great danger to your sheep is that they are put upon steamers carrying American sheep; these sheep have scab, and it is a very infectious disease, so it is quite possible that your sheep coming in contact or coming in the same steamer as these have the scab. I said to the inspector there, "It is very unfortunate that you condemn so many of our Ontario sheep; we have no scab." "Well," he says, "they have the scab when they come here," and that is the only way I can account for their having it. Of course these sheep where they run in large bands on the western prairies have the scab more or less all the time, and this year owing to the cheapness of freight a good many of the American sheep came this way, and that is the reason why so many Canadian sheep were condemned this season.

Mr. SMITH: Speaking of the scab, that it does not exist in Ontario, I have been informed that in the county of Simcoe there have been some cases. I think probably Mr. Lawrence will be able to set us right on that.

Mr. LAWRENCE: Yes, it did exist, but I think it is pretty well all cleaned out now.

Mr. GOULD: The first symptoms we usually see of it are the sheep will take his leg and scratch his shoulder and scratch off the wool, and the itching is so intense that they will bite it and pull out the wool. Now it is quite possible that a sheep may pull off the wool and yet not have the scab.

Mr. LAWRENCE: I know it was said to be in our neighborhood some two or three years ago. There was a Dutchman there who cured it right straight with one or two applications.

Mr. GOULD: It is a matter of the greatest importance that wherever you see a case of it it should be stamped out at once. It is easy to stamp it out in its earlier stages. I used to have a sheep ranch in the west, and I know what the scab is. We used to dip them there in a strong solution of lime and tobacco juice made very hot, and we had a place where we dipped them. We used to dip about 1,500 or 2,000 a day. That was immediately after shearing. Then they ran out upon the range for a fortnight, and then we would take them in and dip them again, and also dip the lambs. We gave them two good dippings, and then before putting them in winter quarters we dipped them again. By that means we kept them thoroughly clean.

Mr. SMITH: Could you give us any information with regard to the prospects of any cattle trade with Germany?

Mr. GOULD: Not other than with Belgium. In Germany, owing to some legislation in the United States, they have been retaliating, and have forbidden the importation of live cattle or dressed beef. I am not aware of any efforts being made in Canada to open up trade with Germany direct. In Belgium the prices were high, owing to a shortage of cattle in Switzerland, and I was rejoiced at the idea that we were going to have a good market for Canadian cattle, but unfortunately it was stopped. In France the duty is three pounds per head, and they have to undergo certain examinations, but when they are once landed there of course they can pass into the interior.

Mr. McCRAE: Are you aware of any cattle from Ontario having been objected to as having pleuro in the English market?

Mr. GOULD: Yes.

Mr. McCRAE: I understood they were from Manitoba.

Mr. GOULD: Some cattle that were shipped by a Port Perry firm on the steamship "Lake Winnipeg" were claimed to have pleuro Our Government, immediately on receipt of this news, sent letters up to Port Perry to the party who had shipped these cattle. They went direct to these herds, but not the slightest evidence of pleuro could be found to exist. The first ones were from Manitoba—from some oxen that came from Winnipeg.

Mr. BOYCE: How do our cattle compete with the North-west cattle in the English market?

Mr. GOULD: Very favorably, for the reason that North-west cattle are very wild and very difficult to handle. They are of a peculiarly restless disposition. They get very much bruised in transit, and they fall away in flesh, and the result is that they can be detected at once in England. You can tell a bullock that is wasted at once, and, as I said about dressed beef, they don't taste like cattle that have been well nourished and slaughtered and hung up. They taste tough and leathery, and they bring, on the whole, from a half-penny to three farthings less than your domesticated Canadian cattle. The South American people are sending good cattle, but they are a great deal like these western cattle. They are from the pampas, and have a very long voyage to come, and they arrive in a very emaciated condition. Now, as to the lamb trade, if you people would castrate your lambs, and feed them well, and get them ready say some time during next month, there will be a scarcity of lambs and good sheep from now on to about the 1st of June, and your lambs will find a ready market at remunerative prices. If I were now farming I would endeavor to grow as much grain as I could make into beef, mutton and pork, and the result would be to enrich the land and get along much better in every way.

Mr. McCRAE: You say that the time to ship sheep is in March, April and May?

Mr. GOULD: Yes, February, March, April and May.

A MEMBER: What market is that for, the United States or England?

Mr. GOULD: England. We don't ship anything to the States, except lambs.

A MEMBER: Give us some estimate of the cost per head to ship to England.

Mr. GOULD: The ocean space varies very much; sometimes from 30 to 50 shillings per bullock. You are allowed to put eight sheep in a bullock's place. The feed is another thing that you have to take into consideration. The feed is usually about as much as will feed a bullock, that is, for eight sheep during the voyage.

A MEMBER: What weight should we get our lambs up to?

Mr. GOULD: The heavier the better; lambs that will weigh from 100 lb. up, and sheep that will dress from about 70 to 75 pounds. Get them nice, evenly fleshed, and you will be sure of a good market.

Mr. McCRAE: Will heavy, long-woolled breeds market as well as Downs?

Mr. GOULD: No; Downs or Irish are the best. In England, when a butcher slaughters a Down sheep, he will leave a little bit of the skin on to show the purchaser that it is of the Down variety. They are supposed to be nicer flavored and bring a higher price. We don't care about having a heavy carcass, we like a nice medium weight, well fleshed. That is, a sheep that will dress from 70 to 75 lb. and lambs from 50 to 60 lb.

Mr. MORRISON: How much dead weight will a sheep test to the live weight?

Mr. GOULD: If you have a sheep that is well fattened, and he has a good voyage, he should dress out one-half; but these old ewes will not do it.

Mr. SMITH: Is it possible for us to have our sheep too fat for the English market?

Mr. GOULD: Yes; when they are too fat there is a waste about them.

Mr. SMITH: Do they usually fall off much upon the voyage?

Mr. GOULD: That depends very much upon the voyage they meet. In the spring of the year, if they make a good voyage, they don't; but if the voyage is very rough, and particularly if the attendance is not good, they fall away very much.

A MEMBER: How about shearing lambs in the fall for the English market?

Mr. GOULD: I would not advise it. I saw some lambs in London three weeks ago yesterday that we had from Montreal customers, and they were all shrivelled and shrunk up owing to the cold weather at sea.

Mr. MORRISON: What would it cost on the average to ship a bullock from Toronto, from the time he leaves Toronto till all expenses are paid?

Mr. GOULD: That varies sometimes $2 or $3 a head, but under ordinary circumstances, from $25 to $27 or $28 should cover everything.

Mr. MCCRAE: Then your opinion is that we want to do everything we can to get the market again for live cattle?

Mr. GOULD: Yes. The most important consideration we have is to have a remunerative market for cattle and sheep.

Mr. SMITH: What are the prospects for that?

Mr. GOULD: I am sorry to say that I think the prospects are not very good. There seems to be a strong feeling on the part of the British farmer against the idea. Then the landlord interest is very strong, and that is with the farmers. Then the influence of the Irish members in the House of Commons is especially strong just now, and it would be a death-blow to the Irish cattle trade for our cattle to come in direct competition with them, so we need not expect any help from that source. By being allowed to go into the interior our cattle went into the hands of a better class of consumers than when they are slaughtered at the water-side. When they are slaughtered there the beef has to be sold as foreign meat and at the lowest price.

A MEMBER: In your opinion, what is the reason that the prices of cattle range so much higher in Chicago than here?

Mr. GOULD: The reason is now owing to the failure of the corn crop in the west, in the cattle-producing states, Nebraska and the western states. Last year the corn crop was very poor, and a poor corn crop means a poor cattle crop, and a poor quality and high price in Chicago. That is one reason I think the prospects for good cattle will be better next spring, and for some time, owing to the scarcity of good cattle in the States.

A MEMBER: I think I heard of some cattle being sold in Chicago the other day for 5¾ cents.

Mr. GOULD: Well, these cattle do not go to England at all; they go to New York and Boston for the swell city trade, for the best hotels. These people in those large cities are wealthy, and they will have none but the very best. Cattle that are exported are bought around 4¼ and 4½ cents.

A MEMBER: Then if we had the United States market we could expect the same price for cattle as Chicago?

Mr. GOULD: If the cattle were of the same quality you would have the same price. It would be to the advantage of the people of this country now, if we are not going to have the embargo removed, if the Government would allow American cattle to pass through here in transit; it would be better for the shipping interest. And if they would allow our cattle to pass through the United States in transit we could bring them in competition in regard to freight. No doubt the Government will see the propriety of doing this if there is no prospect of the embargo being removed. Now our cattle have to go the long railway journey to Halifax; so we are practically shut out for six months of the year. However, the rates by the Montreal route as compared with the New York or Boston route do not vary much over 10 shillings.

A MEMBER: I have seen it quoted in the papers at fully one-half.

Mr. GOULD: Well, unfortunately, the papers are sometimes misled in regard to these matters.

A MEMBER: Do you not think that the disease that the veterinarians in England have found has been caused more by the hardship of the sea voyage and railway traffic than by anything else?

Mr. GOULD: Exactly, that is just it. The cattle catch cold on board the ship, and it sets up a species of inflammation in the lungs, and when they arrive there, these people, in their anxiety to find a case of pleuro, pronounce it that. I don't think there is any pleuro at all.

Mr. HONEY: Would you advise the farmer to feed wheat to animals for the old country market when it is selling at 50 and 60 cents a bushel?

Mr. GOULD: Well, my knowledge of the value of wheat as feed for cattle is very limited, but mixed with other grains I should think it would pay very well. In the United States they are feeding very large amounts of wheat to cattle and hogs. I have no doubt you could make more out of it than 60 cents a bushel. Another industry I would like to call your attention to is the great amount of hay consumed in London. There is one firm that chop up the hay very finely, and it is pressed like shavings or sawdust and put in compact form, about two feet square, weighing about 60 to 80 lb It finds a very ready market in London at remunerative prices for the reason that storage in London, Liverpool and those large cities is a great consideration. I would think it would be very profitable for farmers to export their hay in that form.

FARMERS AND THE AGRICULTURAL COLLEGE.

Mr. HOBSON, of Mosborough, then read the following paper on "What means can be adopted to bring the Farmers in closer touch with the Ontario Agricultural College and Experimental Farm?"

As the position which the College and Experimental Farm will take in the minds of the farmers of this country as a factor in advancing the interests of agriculture, and of giving farmers a better status will depend on it being established beyond all cavil that such good work is being done, it is then of the first importance that those in connection with the institution do good work. The next thing for the farmers is to be made familiar with this work, and in such a way that they will have full confidence in it, and the character of the work being done should be dwelt upon. There may be room for a good deal of difference of opinion regarding the way a knowledge of this work can best be brought before the farmers.

First.—I would say by inviting them to visit the College and Experimental Farm in the summer months where they can see for themselves what is being done in class-room, the farm proper, and the experimental department. It is difficult to fully realize all that is being done unless it is seen. When men walk over the grounds of the Experimental Farm, and find that there are seventeen hundred plots containing experiments with all kinds of farm crops; when they go into the stables and into the rich pastures and find twenty-six breeds of cattle, sheep and swine; a splendidly equipped cheese factory and creamery under the co-operative system; a home dairy in operation; and, if visited at this time of the year, a dairy school crowded to its utmost capacity with those anxious to learn all that is new and valuable of one of Canada's most important industries, not till then will they fully realize the vast magnitude and the great value of the work constantly going on. But when we consider the number of young men who attend the College as students compared with the whole body of the farmers of this country, and how few comparatively speaking ever take the trouble of seeing for themselves the good work that is being done; and further, when we bear in mind the small percentage of those actually engaged in farming in any given section who are members of Farmers' Institutes, and in this way avail themselves of the opportunity of keeping in close touch with the work done at the Institution, we need not wonder that in many quarters there is comparatively little known about the College and Experimental Farm and the work there accomplished.

Second.—By having an officer or a graduate of the Agricultural College, who is familiar with all that is being done at the institution, sent to as many Farmers' Institute meetings as possible. However, if this idea is carried out, the success or otherwise will just be in proportion to the care exercised in selecting the right men. The mere fact of a young man having been a graduate of the College is not by any means a certain guarantee that he would be a strong man to carry out the work spoken of. It is not to be supposed that good work is not now being done in that way. We all know that many of them are doing valuable work in their own localities, and not a few, like my friend Mr. Raynor, have made their influence felt at many a meeting and at many a place beyond the bounds of their own parish. That is as it should be, for it is clearly the duty of those young men not merely to rest content with the benefits they have derived from their studies in an institution kept up in a large measure by the taxpayers of the country, but as good and loyal citizens they should spread abroad a knowledge of the advantages to be obtained not only to those who attend the college as students but to farmers generally, the importance of keeping closely in touch with what is being done there—particularly regarding what is being done along the lines of experimental work.

If I were to be asked in what way can the ex student best carry on that work, I would unhesitatingly say, through the Farmers' Institutes. If many of those young men who felt themselves qualified for it were to put themselves in the way of being appointed secretaries to the associations in their own localities, and throw themselves heartily into the work, a great deal in that way might be achieved. Perhaps there is no other way in which valuable results could so quickly be brought about. It must not, however, as I have already said, be understood that little or nothing is being done in that direction. On the contrary, the work which they are doing is becoming a power for good, not alone in this Province but in all parts of the Dominion. These young men are to be found spread over the Province, and not a few are to be found doing valuable work in bringing about a better state of things in Manitoba and the territories beyond.

Another means which is being employed, and which perhaps might be worked to a yet greater extent with advantage, is what is being done by the members of the College staff. It is to be presumed that nearly everyone who is with us to-day has on various occasions attended meetings which have been taken part in by some of the Professors, and I am sure you will agree with me when I say they are doing splendid work, and it is well worth considering whether that power could not be used to a yet greater extent. Before leaving this question of the work done by the Professors, I will for a moment digress by saying that from extended intercourse with the farmers in this country, and from the opportunities I have had of discussing these matters with them, I have long ago come to the conclusion that one of the greatest of all difficulties to be contended with in carrying out the work of the college is, to put it in the mildest way, the luke-warmness of many of our successful farmers. In making that statement I speak whereof I know. In very many cases it almost amounts to opposition. And what makes this somewhat latent opposition more difficult to contend against is the fact that many of these men who have been eminently successful, and who would take a foremost place if pitted against the farmers of any country, have never had the advantage of a college training, and have never studied science as science. These advanced farmers, who are so in the true sense of the word,—for those men who debar themselves and their families from every social enjoyment and whose only and highest object in life is to make money, do not belong to that class who have a right to be spoken of as successful farmers—will almost invariably be found to possess force of character, coupled with ambition, and a strong desire to excel. They will also be found in nearly all cases to be men who have cultivated the faculty of close observation, and this, with long experience, has resulted in their acquiring in no small degree a knowledge of those sciences bearing directly on their calling; or, in other words, they have become scientific farmers in spite of their lack of opportunity in early life. Would they not with all their success have been saved many failures and much disappointed hope if their scientific knowledge had been acquired in early life? The point which I have been trying to make in this connection is this, that if we are not prepared to admit the great value of science as an aid when coupled with a good practical knowledge of agriculture, then there would be but little use in trying to uphold the importance of college training.

Perhaps it might be worth considering if the press ought not to be used a little more than it has been in the past. Take many of the farmers living away down in those counties bordering on the province line of Quebec or those whose homes are near the St. Clair, unless they are members of the Farmers' Institutes and in that way have an opportunity of studying the literature which is sent out from the College and Department of Agriculture to all members, what can they know about the college and its work? For if they will not join the Institute it is not to be supposed that they will take the trouble to acquire information in any other way. Might it not be well to have the College and its work occasionally brought more directly before the farmers of the country, as already said, through the medium of the papers?

There has been some little discussion as to the fairest plan to be followed in distributing the surplus stock of the farm. Whatever plan might be adopted would no doubt be more or less open to objection. Of late years there has been an annual sale, and with the view of placing all the farmers of the Province as nearly as possible upon an even footing, the freight has been prepaid by the Government. This is all well enough in its way, but it does not appear to be going quite far enough. It gives the farmers in that part of the country adjacent to the Government farm a very great advantage over those living farther away, and when it comes down to the counties beyond Ottawa and Kingston the farmers there are practically excluded from obtaining any advantage from the distribution of this stock. And what would make it appear to be still more desirable that the men in the extreme east and west should be put on a more even footing in the matter of purchasing is, that with the exception of dairy cattle all other classes of farm stock of high breeding and quality are more difficult to obtain in those districts named. I have said distant buyers have been practically excluded for the reason that the cost of travelling from these distant points added to the purchase money makes pretty dear animals by the time their destination is reached. There may be, however, obvious objections which I have overlooked, to holding the annual sales periodically at distant points in the Province. There is much, however, in favor of the plan suggested of which there can be no manner of doubt.

1st. It would place purchasers upon a more even footing.

2nd. It would place the stock where there is rather more difficulty in obtaining it in any other way, and where it would be likely to do the most good, not only introducing high class animals with the view of breeding up, but as object lessons the work aimed at by the College would in this way be carried out. And it certainly would be a very practical way of bringing the farmers and the College into closer touch.

The next suggestion which I am going to make with the same end in view is that an exhibit of what is grown upon the farm and the experimental department be made at a number of the leading county shows. This exhibit might be made to take a pretty wide range. If it included what was promising in new varieties, and especially those which had been fully tested, in grasses, clovers, grains and vegetables, and it might be fruits or anything else produced on the farm, an exhibit of this sort would be exceedingly interesting, and would certainly attract a great deal of attention and bring in a prominent and practical way the work of the College and the outside departments before the people. As well as serving a good end in the way mentioned, it could be used as a factor in some small degree in checking the ever more strongly growing desire to turn our so-called agricultural fairs into race tracks and variety shows. To carry out this idea in a way which would be likely to bring about a large measure of success it would appear to be necessary that there should be at least two exhibits. otherwise comparatively few of the county shows could be reached. Then again great care should be exercised that it be placed under the charge of first-class men, capable of giving the fullest information along every line bearing on the work of the institution and the relative merits of the different products grown, their characteristics, mode of cultivation required, and in fact be able to answer every reasonable question that might be asked bearing on the exhibit. As samples would be on exhibition there seems to be no good reason why orders might not when desired be booked for grains grown on the experimental farm. At the same time instruction might be given to the persons in charge to be prepared to give full information to all requiring it of everything bearing on the College course. In this way a very great deal might be done along the lines of education. And we may reasonably suppose that it would be no unimportant factor in stemming the torrent of growing abuses already alluded to which have crept into the show yard, and which are sapping and undermining the usefulness of institutions the value of which to this Province in years gone by could hardly be over-rated.

This brings me down to the last suggestion which I propose making at this time in the matter with which we are now dealing, and it is this, that the greatest care be exercised in trying to get the best available men for institute work, and that, as in the past, the institutes be made the medium of distributing extensively the valuable literature which emanates from the College and the Department of Agriculture--sending to as many homes as possible reports and bulletins giving the results of experiments along the various lines on which the College staff is working. Particularly should the work of the experimental farm be kept prominently to the front; and with this end in view it is highly important that an officer or graduate of the Agricultural College who is familiar with the work of the experimental farm be sent to the institute meetings held in Ontario.

It would also be working in the right direction if the presidents and secretaries of the various farmers' institutes would make themselves familar with the work being done, and impress upon members and others the value of studying the reports and bulletins carefully, that they might reap advantage therefrom.

I was very nearly forgetting to speak of what is being done by the co-operative work of the Experimental Union. There are great possibilities for this in the future, and a great deal has been achieved in the past, very much more than is known of by the general public. I believe that the Experimental Union work is one of the greatest factors which can be used in showing the farmers that there is a real practical connecting link which if only used properly will draw themselves and the College and Experimental Farm in very close touch; and I feel compelled to add that I believe it to be a much more economical and satisfactory method of doing the work than through expensive branch stations which are being used in some of the States, and, as far as my information leads me to know, with not very good results.

A MEMBER: In reference to the exhibition, do you suggest that the articles exhibited should be exhibited in competition with the articles by farmers, or merely exhibited for show?

MR. HOBSON: I would not like to give an opinion. I brought that forward in that shape for this reason, that I was trying to suggest what would be the best means for the farmers acquiring a knowledge of the work done there. There are many matters of detail which would require to be carefully thought over, and this is one of them. Speaking on the spur of the moment, however, I would think that it would be an entire mistake to send that exhibit out to come in competition with the farmers.

MR. RAYNOR: I was very much pleased with the remarks that Mr. Hobson has made with regard to bringing the farmers in closer touch with the institution. He touches a warm spot in my heart, for I had a close connection with the College for the greater part of three years, and I know something of the valuable information that is imparted there; and I know there is great lack of information in the farming community generally with regard to the nature of the work carried on. I think some of the suggestions he has made are very practicable, and can be put in practice at very little expense. In the first place, I like his suggestion that more of the ex-students and graduates take an interest in farmers' institute work. I have noticed that a good many of them have a close connection with that work in the various ridings I have visited, but I have found, too, that a great many more could have taken a far greater interest. We do not find very many of them giving us papers at the local institutes. This has arisen probably from dividing the two days' meeting at different points. They allow the delegation, which usually consists of three, to take up all the time in delivering addresses. I think perhaps if fewer were employed on the delegation and more were brought out from the local institute men that a good deal of information of this kind would be disseminated by our ex-students and graduates. Mr. Hobson referred to the sales of the live stock at the Experimental Farm. I, as one coming from the east, have felt long since that it would have been of great value to us if a portion of those animals, at least, had been offered for sale at some eastern point, say like Kingston or some point farther down. We could have improved our herds at much less cost than by coming to Guelph. And now when the pre-payment of the freight on these animals has been withdrawn I think it would be very practicable. Then in reference to the exhibit being made at county fairs, I think that would be a very useful object lesson, and I have no doubt that at that time some of the men in the employ of certain departments at the College would be able to accompany such an exhibit. It would bring us very materially in touch with the workings of the Institution ; it would show what they are doing of a practical nature, and I have noticed that is what the farmers want through the country. They want to know what it is accomplishing practically. I think farmers have been expecting far too much of the College graduates. When they have gone home upon their farms they have expected a revolution in two or three years. Now you are well aware that a young man attending that institution, say from the age of 18 to 25, is not as mature in judgment as men who have had 20 or 30 or 40 years' experience, and to expect them to go right home, with a limited capital, and so change their operations as to surprise and astonish you in the marked advantage they will have over you, is going beyond the intention of the work or even the capacity of the few ordinary College graduate. But I believe if you give these young men a chance, and a years to turn themselves, that they will acquaint themselves with the changed conditions of our country, and you will find perhaps more of these young men able to compete in these times of close competition than you will of those who do not avail themselves of such opportunities. So I would ask you not to expect too much of our College men just immediately after coming from that institution. Reference has been made here to the Experimental Union, and if I mistake not Mr. Zavitz is the man most capable of giving information along that line, and I hope he will say something with regard to the good work being conducted throughout the Province. I have done a little of that work, and it has been of considerable value to me. I am sorry that more of our College men are not here to-night to emphasize the suggestions that Mr. Hobson has so well made, and perhaps point out some other ways in which that institution could be brought in closer touch with the farmers.

Mr. Jeffs : About the local men not taking part in the institute meetings, when there are three of a delegation sent the local men do not feel themselves called upon to do any work. But in the county of Simcoe the young men of the College have done grand work, and it is out of sheer modesty and not from any neglect of duty or want of ability that they do not take much part in them. Now I take considerable interest in the Ontario Agricultural College ; I have a son who graduated in 1883, and I would like if more of the farmers would get into the way of sending their sons there. It is not like sending them to get an education in a high school. The great objection to a college training for farmers' sons is that the moment we have given them a good education they go into some profession and are led off the farm entirely. It would be a good thing if we could impress upon our farmers the fact that the same amount of real, practical knowledge can be imparted there as in any high school in the Province without any of its disadvantages.

Mr. Geo. A. Aylesworth : I cannot let this opportunity pass after listening to that fine address from Mr. Hobson, of assuring him and the others here that things are not all what they seem in the way of there being a lack of good work accomplished throughout this Province by that College. It does not all appear upon the surface, or even in our institutes. I was brought up within ten minutes' walk of a high school. I was born and bred on my grandfather's farm—it is now my father's—and I know what that old man thought about book learning. His opinion was briefly this: That book learning and book education spoiled a boy for farming and for work generally. Now that impression is abroad in the land yet in the good old heads of the men that have made this country what it is, and that is partly to blame for the "backwardness of coming forward" that is displayed by a good many of the graduates of the College. They know that there is a good deal of contempt for what is taught at a college with regard to farming. That, I am glad to say, is passing away. One proof of that is in the movement that has crept into this institute the last few years with regard to teaching agriculture in public schools. Did you hear about that ten years ago? There is something in that, and something that will bear ripe fruit in the near future, and that is traceable almost directly to that institution at Guelph. It is a result that is most valuable; it is hard to overestimate it. There is a new condition of things being forced on by hard times, and like many other things that seem like curses and hard to be borne, they are bringing in their train good fruit, as almost all evils sometime or other do. There is a new attitude of mind, not in the farming community only, but in the whole community with regard to the direct application of science to farming and of the direct application of practical education in all lines and in all directions. And if farmers are going to be where many of them think they ought to be, in the Parliament and Legislatures of this land, they ought to know something about the contents of our statute books and about the history of the English race, something about everything in fact, for there is hardly any item of human knowledge that will come amiss in a long life, even although that life be spent mainly upon the farm. The work of the Agricultural College is bearing fruit, and striking its roots deep into the hearts and minds and thoughts of the farming community, and they are the great mass of the people of this province.

Mr. YUILL: I was very much pleased with Mr. Hobson's paper. Science is useful in farming, but it is useful only in so far as practice bears it out, and that is one thing about the science that is taught at Guelph—there is nothing taught there but what has been borne out by practice. There is a prevailing idea over the province that the College costs too much for the work it does, and I am sorry to say that the nearer we go to Guelph the wider that idea prevails. I travelled this country this year from here to Owen Sound at institute work, and the worst meeting we had, with one exception, as far as numbers were concerned, was at Guelph. Then again, almost every county in the province has students at that College except the county it stands in. Now perhaps that College is costing a good deal, but I say if it did nothing else than to show us how to kill potato bugs it has done more good than all it cost. I have a son who graduated from that College three years ago; I have a second son there now, and I have another preparing to go. I don't want to see ever a boy of mine go on to a farm in Ontario without at least a two years' term at that College. I was pleased with what Mr. Raynor said about expecting too much from these students immediately after they came home from the college. When he comes home we have been expecting that he knows ten times more than we do who have spent our lives on the farm. But I know that my boy learned more at that College in the time he was there than I had in fifty years on the farm, and if it was nothing else than just the way he learned to attend the cattle I consider it has paid me ten times over for all the money it cost me. I would not say to those who have boys to make them all farmers, because the leading men in all professions are farmers' sons, but the mistake we have been making is in sending all the smart boys to the professions and keeping the dull boys on the farm. Now, any dull boy will do for a doctor, or lawyer, or minister, but it takes a smart boy to make a good farmer. About this exhibit, I think it would be a good idea, but I would like to have some live stock along with it. Then in regard to the annual sale, I think it would be a great boon to the eastern part of the province if it was held in different parts each year. It is quite an undertaking for us down there to come up to Guelph, and then if we get an animal we have got to stop there till we get facilities to ship it, so that it may be two or three days before it comes our turn to get it shipped. As Mr. Raynor says, it might be taken to Kingston. I think it ought to come once in a while to Carleton Place. I think it would be a good idea if these sales were held one year in the east and the next in the west; if they brought good prices in the east then go back again, but if they brought poor prices I would go no more. I will conclude by saying that I think we ought to send more of our boys to the Agricultural College, and we should not expect too much of them the first year or two after they come home.

Mr. Hobson: Mr. Yuill has said that in all the country from Guelph to Owen Sound the only real poor meeting they had was at Guelph. Now I don't want the gentlemen of this meeting to go home with the idea in their minds that the farmers living around the College near Guelph are a non-progressive people; it is the very opposite. You would not for a moment expect that our farmers, living as they do under the shadow of the College walls, where they can draw their inspiration and acquire all their knowledge, are going to go to an ordinary institute meeting. (Laughter.) About his suggestion to exhibit stock, I don't agree with him in that. I think it would be a mistake. It would make the work more troublesome and more expensive. Everything is judged relatively, and while there is great and good and valuable work being done at the College, yet no one pretends to say that in the representative animals of the different breeds the College animals will show away far and beyond what is seen at any of our first class exhibitions. But when it comes to products it could be shown very clearly wherein the good work is being done, more particularly in regard to experimental work.

Mr. Lawrence: I think we should be educated in our business, and should take advantage of all these things. I think we should take advantage of our schools, and we should go to our common schools in the country, and speak to the boys for an hour or half an hour once in a while—there is no trouble in getting a chance to do that—and you would be surprised what good it will do by showing the advantage of agricultural education. Because what is education? It is just knowledge, or knowing your business, and if you understand your business you are an educated man. I have often visited the schools in our section, and I have always been asked to go back again. So that if you wish to advance agriculture in this country and the benefit of the Agricultural College, just go the common schools and talk on some interesting subject. Show the boys the importance of being a farmer and of being an educated farmer. Show them that they must learn the first principles at home in the common schools, and then go to the College at Guelph to finish their education. I think it would do as much good as anything you could do, and you would be surprised to see how eager these boys would be to get a little information upon the different subjects. Show up the sunny side of farm life, because there is nothing like farming I don't believe we should be farmers if there is anything else better, but I believe if we understood our business farmers never could make money faster than they can to-day.

Mr. Smith: I introduced a resolution at a former meeting to the effect that the trend of our present system of education is in the direction of creating a class of non producers, a class of which we already have too many. There are few of those who once go to our high schools who afterwards return to the farm and become producers, or return to any of the trades; but they at once push to something else and despise—I say it advisedly—that class of people upon whom they afterwards become parasites. Now, this is plain speaking, and though last year I was barely able to get a seconder to my resolution, I afterwards congratulated myself upon the stand I had taken when I saw that such men as the Hon. Mr. Martin, of Winnipeg, some two weeks later, in a speech in that city, took practically the same ground as I had taken. Somewhat later I noticed that Mr. Meredith, then the leader of the Opposition in the legislature, took virtually the same ground, so I congratulated myself upon being in such good company. The aim of the public school has been to fit scholars to pass the entrance examination, and the aim of the high school seems to have been to push them on to the university. and in that way they are completely lost as producers. But I think the tendency of the times now is to give our children a useful education, an education which will fit them to become useful members of society. There is another question in the excellent paper just read, as to the delegates to the local institute meetings. I, as secretary for one of these, would like to say that we like to take all out of those gentlemen that we can when they come, so we don't calculate to have very many papers from local men. We put plenty of questions to them though, as I think some of you will bear me out in saying. In regard to the annual sale, it occurred to me that it might be well to still hold the annual sale at Guelph, and as an inducement to people to visit those sales to offer to any person coming over a certain distance, say thirty or forty miles, and who purchased any animal, to have half of his fare paid and the freight paid on the animal. It would also have the effect of bringing more people to see the farm and its surroundings.

A MEMBER: I think we have great reason to be thankful that the College has been as successful as it has. It is only a matter of twenty years since it was organized, and it was practically one of the first colleges in America in that line. We had to educate our professors from the very commencement, but now instead of educating our own professors we are in a position to send professors all over America. I believe there is no better way to further the interests of the College than by extending the bounds of the farmers' institute. I think it is little less than a disgrace to have to say that we have only from 50 to 150 representatives, when the fact of the matter is we ought to have four times that number. Every farmer in the country ought to be a member, and if he was there would be no lack of enthusiasm in regard to the College at Guelph. The statement has been made time and again that although that College has been attended by a large number of young men there are comparatively few of them in the agricultural ranks to-day. I believe that statement is false. That idea has arisen from the fact that when a young man, after having gone through that College, goes into something else it is heralded through the length and breadth of the land. Furthermore, there are few of the graduates of that College have come to middle life yet. We all know that farming is not an occupation at which men become millionaires before they are forty. We are only gathering, and I think when the men who have passed through that College get to be grey haired men we will have vastly more intelligence amongst the farming community than at the present time. Now I believe that the time is coming when the farmers of Canada will have harder work to maintain their supremacy than ever they had in times past, so in order to live we need all the agricultural education and knowledge we can possibly give to our children.

Mr. MORRISON: I think if there could be a winter session at the College for farmers' sons—say from November till March—it would be a good thing. I am satisfied that they would learn a great deal even of feeding cattle, and that is the great trouble with farmers, It is in feeding the cattle through the winter that they lose the money. If they have fifteen head of cattle and they lose 100 lbs. each, that is 1,500 lbs. of beef. Then I think if a young man went one session he would probably go back a second or third. I don't think it would be advisable to move the annual sale away down to Carleton Place or Kingston, but I think it would be a good thing to pay the fare of a buyer coming from the east or west, and also the freight on the animal he buys. That would give him the same advantage as the people around Guelph.

Mr. DANCE: The old saying is brought very forcibly to my mind by this discussion, that a prophet is not without honor save in his own country and among his own kindred. It has been said that the people nearest Guelph know the least about the College. Now I have heard a great many things said about the College, but I have come to the conclusion that the people who say the most about it know the least. They are simply talking about something they know nothing about, and they don't take the trouble to find out. That same saying will apply to what has been said about local help at the farmers' institutes. We often find good local men in one electoral division who will talk much better in another county. Possibly they are too well known at home, and while they may be able to make a good address or read a good paper, people will say, "Well, it is all right in theory if you would adopt it, but you don't carry it out in practice." What we want is practical education, not theoretical. In reference to the sales, I don't think it would be a wise plan to remove them from Guelph, but I think some scheme might be adopted, as has been proposed, whereby the freight on animals bought to be taken far east or far west would be paid, and also contribute a portion towards the fares of the individuals who go there to buy.

Mr. YUILL: I would like to correct a mistake Mr. Hobson made. He told us that I said the meeting at Guelph was the worst we had on the route this year. Now that is not what I said; I said that as far as numbers were concerned it was the smallest meeting except one; but we found as intelligent men at Guelph as anywhere. One advantage in having the live stock from the College at the county fairs would be to show the people the different breeds. It is remarkable the ignorance of the mass of the people with regard to that. It is not townspeople only, but people brought up in the country who don't know one breed from another.

Mr. ZAVITZ: I have certainly been very much pleased indeed with the remarks made here to-night. While I am connected with the Agricultural College myself, still my life work has been very closely connected with the farmers over the province. I was brought up on a farm, and my work at the College is of a very practical nature; and therefore when I come to a meeting like this and hear the remarks that have been made I feel that I am a practical farmer myself. I always have had that feeling. I would like to say a few words about the work of the Experimental Union. Mr. Hobson spoke very highly of this work as being one of the closest ties between the institution and the farmers. I believe this certainly to be the fact I believe that the Union is one of the closest ties that there is to bind farmers to their Agricultural College. It was an association formed by the ex-students of the college about twelve years ago. They met, as the alumni of all colleges like to do, to hold a sort of a reunion, but it took the form of a sort of farmers' institute. That went on for five or six years, and we had a farmers' institute carried on at the College about seven years before we had them over the Province. Then, after a while they saw the great need that there was of co-operative experimental work over the Province, and there was organized a little experimental committee in connection with this Union, and in the year 1886 there were twelve experiments. The next year this number increased to sixty; the next year to ninety. Then other farmers, seeing the work going on, wished to join in it, and an invitation was extended to them also. The work has greatly increased; so much so that during the past year 1,340 of the ex-students and other farmers over Ontario have been working hand in hand in this work. During the past year we have sent out about 8,000 packages of grains, seeds and fertilizers, and during the past three years we sent out about 22,000 packages of grains, seeds and fertilizers. Now you see the importance of this work. If we obtain all the different varieties of grain over this Province and grow them side by side for a number of years we are able to find out which varieties will give the best results. Then we secure the leading varieties from foreign lands, from England, Scotland, Germany, Spain, Russia, etc., where the climate is somewhat similar to our own, and bring them in and grow them side by side with the varieties of the Province; so in that way we are enabled to find out which ones will give the best results at the Experimental Farm. Now, these results will not apply all over the Province, so we make experiments in different parts. In this way a person can get the cream of the work carried on at the Experimental Farm in the leading varieties, and then go to his own farm and find out which will give the best results. We try to get the different characteristics of the different classes of grain combined. For instance, in the case of oats, we try to get all the characteristics of oats combined in these leading varieties, so that no matter what kind of soil these are grown on there is almost sure to be one or two that will give good results. I believe this work is one of the most important factors in bringing the farmers and the College in closer touch. In regard to the students, I would like to say a few words as to what I have noticed among those who have gone there during the last ten years. Of all those students I have not yet seen one who said he was sorry for it. Another thing I have noticed is that during the last five or six years I think there has not been one year but what there has been at least ten students there who have had brothers there before them. Then again we sometimes hear that the College has a tendency to take young men away from the farm, but I am sure it will be pleasing to you to know that over ninety-five per cent. of the Ontario farmers' sons who come from Ontario farms go back to Ontario farms again. And when we realize that it is through the ex-students that this Experimental Union was established, and that we owe what connection we have with this Union to the ex-students at the present time, how can we say that knowledge has a tendency to draw young men away from the farm? I believe this co-operative work is probably the largest, most systematic, and is probably the most practical system of co-operative experimental work which can be found in the world to-day. I do not know of its equal. I do not speak of this in a boasting way by any means, but I simply mention these things to you here as the discusssion has led up along that line.

Mr. DALLAS: With respect to the opposition to the College, I don't think there is much in that, because it would not be worth a great deal unless it would provoke some opposition. Now, as the question is how to bring the farmers in sympathy with the College, would it not be a good thing to hold the institute meetings at the College? There are a great many members here perhaps who have never seen the College.

Mr. CUSHING: If the young men do not do their duty at the local meetings I think they are certainly doing it to-night. Now, I had the privilege of attending that College, and I can assure you there is splendid work done there. There is one thing in particular that struck me there, and that was the great neatness in appearance that was required of the students. We give these old grey-haired men great praise for their integrity and the good work they have done, but on the majority of the Ontario farms the farmers are rather slovenly in their appearance. I must say I am sorry to see it. But when the boys go to the Agricultural College they are not allowed to get their breakfast till they have cleaned themselves up and put on a collar and necktie. They are expected to look like gentlemen, and I don't see why a farmer's son should not look like a gentleman as well as a storekeeper's son or a city-bred man's son. The College is teaching cleanliness and tidiness, and I think if there was a little more of these on the farms there would not be the same tendency for the young men to leave them. Some of these students may not turn out very well, but I would like to compare the students of the Agricultural College with the students of the University here at Toronto. When they go out to make their own living some of them make a very poor handle of it.

The PRESIDENT: I was very much pleased at the statement just now made by Mr. Zavitz in regard to the fact—a fact which has been very little known in this Province—that there are 95 per cent. of the students who went from Ontario farms to take a course at that College now farming. I think it speaks well for the course of training they went through there.

Moved by Mr. DALLAS, seconded by Mr. CUSHING, that the thanks of the Institute be extended to Mr. Hobson for his very excellent paper. Carried.

The meeting then adjourned.

SECOND DAY—MORNING SESSION.

The meeting was called to order at 9 o'clock a.m., the President in the chair.

The SECRETARY: In the fourth annual report you will see that a committee was appointed to divide the Province into districts for the purpose of electing the Executive Committee. You will find them in the printed Rules of Order and Procedure as amended. I will now move that Algoma, Manitoulin, Muskoka, Parry Sound and St. Joseph Island be added to Division No. 1, that Monck be added to Division No. 3, and that Brockville be added to Division No. 6.

Mr. RAYNOR: I will second that motion.

The motion was then carried.

RESOLUTIONS.

Mr. BATY: I have a resolution which was brought up in our institute, and it was decided to send it here. I am not sure that it will meet with your approval, nor am I sure that it meets our own. It is as follows:

Moved by THOMAS BATY, seconded by J. D. THOMPSON, Whereas it now costs almost twice as much to produce a dollar's worth of farm produce as it did a few years ago; whereas a dollar now earned is worth very much more, that is, will buy more of the necessaries and comforts of life; whereas some at least of the causes which have brought about this changed condition of things are operating now and will continue to operate, so that much change from the present state need not be looked for; whereas, as can be seen from the foregoing, and as we all know, the incomes of producers, particularly farmers, are greatly less, while the incomes of salaried officials though nominally unchanged are really much larger than formerly; whereas, while the salaries of Government officials when fixed years ago were quite sufficient to be in conformity with incomes of the mass of the people, they are now out of all proportion to what is received by the people generally; therefore be it resolved, that the Dominion and Provincial Governments be memorialized to the effect that in the opinion of the Central Farmers' Institute the salaries of all Government officials should be reduced in conformity with the times at least twenty-five per cent.

The above resolution was referred to the Committee on Resolutions.

Mr. JAMESON: Here is a resolution from the North Renfrew Farmers' Institute:

Moved by JACOB STEWART, seconded by THOMAS MURRAY, ex-M.P., that this institute express a desire to see more of the young men of this Province who intend to be farmers take a term or two at the Ontario Agricultural College, Guelph; and that this institute advertise in the local papers to advise some of the young men of this county to take advantage of the offer the county council makes; also that this institute pay tuition fee for another student at the Ontario Agricultural College in order to promote and increase the attendance at the Ontario Agricultural College of young farmers of Ontario. Carried.

The resolution was referred to the Committee on Resolutions.

Moved by Mr. MONTEITH, seconded by W. W. BALLANTYNE, that the constitution be so amended that the number of delegates from riding institutes to the Central Farmers' Institute be reduced from two to one.

Referred to the Committee on New Business.

Moved by Mr. SIMMONS, and seconded, that this Institute memorialize the Dominion Government to the effect that it will be a great boon to the stock industry of Canada to have an agreement with the American Government whereby the quarantine of ninety days against Canadian cattle shall be removed so far as it will allow Canadian cattle to pass through American territory in transit to the markets of Europe.

Referred to the Committee on Resolutions.

Mr. JAMES SMITH: Here is a resolution passed by the North Grey Farmers' Institute:

Moved by JOHN HARRISON, seconded by H. KENNEDY, that our delegates to the Central Farmers' Institute move that body to request each local institute to petition the Ontario Government to prohibit the making of any lumber wagons with a tire of less width than four inches. Carried.

Referred to the Committee on Resolutions.

Moved by E. LICK, seconded by G. E. MOWBRAY, that in view of the necessity for retrenchment in public expenditure, and also of the advantages to be derived from a greater expansion of the institute system, be it therefore resolved that the Central Farmers' Institute do hereby disband at the close of the present meeting.

Referred to the Committee on Resolutions.

Moved by Mr. DRURY, and seconded, that the name of Mr. Peter McKenzie be substituted for that of Charles Drury on the Committee to consider the President's address. Carried.

ELECTION OF OFFICERS.

The election of officers for the ensuing year was then proceeded with. The result appears on page vi.

The question having come up as to whether the auditors had a right to vote for members of the Executive Committee, the Chairman ruled that under the resolution of Mr. Mahon, passed yesterday, they had that right.

A further question as to whether representatives from other associations and members of the Executive Committee had a right to vote in the district in which they resided, the Chairman said: During the past all duly accredited delegates have had the privilege of voting, and they have generally voted in the district in which they resided. Custom has established that—it has made it almost a law—and I don't propose under the circumstances to rule in any way to depart from that custom.

CLOVER AND LEGUMES WITH SPECIAL REFERENCE TO CRIMSON CLOVER.

Mr. C. A. Zavitz, Experimentalist at the Ontario Agricultural College, read the following paper:

I have been asked to speak for a while upon the subject of clover and legumes with special reference to crimson clover. As Mr. McCrae has preceded me with an address upon clover as a forage plant, I shall dwell more especially upon the scientific side of the question. There are, perhaps, no plants which are grown upon our farms at the present time which have a more important scientific bearing to agriculture than the clover and the other leguminous crops. Practical farmers in the various countries of the world have realized for many years past that clover was an excellent crop to grow upon the land, and that even when large crops would be removed from the land the soil was still found to be in excellent condition for crops which were grown after the clover roots and stubble were plowed in. These practical facts were noticed by scientists, and during the past few years many experiments have been carried on in Germany, France, England and America in order to find out the reasons why these leguminous plants produced such marked results. It seems now quite certain that the various legumes such as clover, peas, beans, vetches, etc., have the power of making use of the free nitrogen of the atmosphere. These crops are, therefore, termed nitrogen gatherers, while other crops, such as cereals, grasses, roots, etc., may be considered as nitrogen consumers. This is the principal factor in making the legumes such valuable crops to grow upon the land.

Essential Elements of Plant Food.

It might be well at this point to speak briefly in regard to the essential elements of plant food. Of the 71 or 72 elements which go to make up all matter, only ten are essential to the growth and development of a plant; without each one of these, however, no plant is ever produced. It has been found, by careful investigation extending over several years, that seven of these ten elements are almost always available to the plants growing upon any soil. The three substances which the farmer has to concern himself most about are potash, phosphoric acid and nitrogen. It is one or more of these three substances that gives the value to the commerical fertilizers that are placed upon the market. The potash is usually valued at about 5 cents a pound, the phosphoric acid at 9 cents and the nitrogen at 17 cents per pound. The two former substances are purely mineral in their nature, and if not already in the soil they must be placed there. The common red clover, lucerne, and some other deep rooted plants, have the power of obtaining a large amount of these substances of fertility from the sub-soil, where it is out of the reach of many of the short rooted crops such as barley, potatoes, turnips, etc. As many of the leguminous plants are sub-soil feeders this is a very strong point in favor of their growth, as they tend to enrich the surface soil by bringing the valuable food elements in a position where they may be made available to other crops. The principal source of nitrogen in the soil is in the form of nitrates and ammonia, which enter the roots in a soluble form. Of all the elements of fertility the nitrogen is the most likely to be lacking, and it is the most expensive for the farmer to buy. The deficient amount of nitrogen in the soil has been made manifest by experiments, which have been carried on over Ontario through the Agricultural Experimental Union during the past three years. The association has sent out oats and along with these nitrate of soda, muriate of potash, and superphosphate to be sown with the oats. We find that the nitrate of soda gave higher results than either of the other fertilizers for three years in succession, and all three fertilizers produced more grain per acre than where no fertilizer was used during each year. In 1892, 160 pounds of nitrate of soda per acre increased the yield of oats by 7.6 bushels, in 1893 7.2 bushels and in 1894 by 8.5 bushels. This gives an average of 7.7 bushels per acre in the experiments which cover three years and which were conducted in 45 different localities over Ontario. We notice from the report of the Bureau of Industries for 1894, that there were 2,330,766 acres devoted to oats in Ontario for that year. If 160 pounds of nitrate of soda increase the oat crop 7.7 bushels per acre, this would make an increase of 17,946,898 bushels of oats over the Province by the use of that small quantity of nitrate of soda per acre. It was found, however, that upon some soils the nitrate of soda more than doubled the yield of oats per acre. This will give some idea of the value of nitrogen in the soil. As all nitrogenous fertilizers are very expensive the question arises, how can this nitrogen be obtained in a cheaper way than by the purchase of expensive fertilizers? The answer comes, "By the use of clover or other leguminous crops," as these have the power of obtaining the nitrogen of the atmosphere without any direct cost. It seems strange when we consider that nitrogen is the most valuable element that the farmer has anything to do with, and realize at the same time, that about four-fifths of the atmosphere by which we are surrounded is composed of nitrogen. Nearly all our farm crops, however, are not enabled to make use of the free nitrogen of the atmosphere either through their leaves or their roots. Recent investigations go to show that, in the case of the leguminous crops, the feeding power of the roots is modified to a very considerable extent by their entering with another vegetable organism. All the different plants belonging to this family possess tubercles on their roots, unless these have been grown in sterilized soil. These tubercles are occasioned by the invasion of an organism present in the soil, the character of which is not exactly known. The results of recent investigations, however, seem to be quite unaminous in the conclusion that it is through the means of this micro-organism present in the tubercules of the roots of the clover that the free nitrogen of the atmosphere is made available to the plants. It has been found in experiments that the nitrogen in a crop of clover greatly exceeded that originally contained in the soil and the seed. A good crop of clover when made into hay and removed from the land, takes along with it a large quantity of nitrogen, but it nevertheless leaves the surface soil actually richer in nitrogen than it was before, from the residue of roots and stubble left in the soil. There is a very great deal of difference as to the amounts of root and stubble of clover as determined in Germany, England and America, but the average amount in these three countries is 3,990.3 pounds or practically two tons per acre. This would contain 90.4 pounds of nitrogen, 36.4 pounds of phosphoric acid and 47.5 pounds of potash. The 90 pounds of nitrogen would be equal to the amount of nitrogen contained in 550 pounds of nitrate of soda, which would cost about $19.25 at the present price of this fertilizer. The nitrogen in each ton of clover hay which was removed from the land would also equal the amount in 224 pounds of nitrate of soda, which would cost $8.54. When we realize that the greater part of this nitrogen has been obtained from the free nitrogen of the atmosphere, we realize something of the reason of the great value of clover and other leguminous crops upon the land.

LEGUMINOUS CROPS.

This large class of plants, distinguished by the fruit, which is a pod with two valves, the seeds being borne at the inner suture only, numbers some 7,000 species of trees, shrubs and herbs, including many cultivated plants, such as peas, beans, vetches, cow peas, lupins, alfalfa and clover. Not only is this class of plants valuable in keeping up the fertility of the soil, but the nitrogen which they contain is united with other elements to make up what are known as albuminoids or flesh formers. It is principally the albuminoids contained in peas, beans, cotton seed meal, bran, etc., that make these foods of such great value for feeding to live stock. Several of the most valuable kinds of leguminous crops have been grown at the Ontario Agricultural College more or less during the past few years.

Peas. This crop can be grown very successfully in this Province, and is one of the most valuable of the leguminous crops for the Ontario farmer to grow. In our experimental grounds at Guelph, we have grown 83 different varieties and find that nearly all of them have been fairly successsful. The Early Britain from England, White Wonder from Australia, Prussian Blue and Mummy from Ontario, are among the leading varieties. Not only is the grain one of the best for feed which can be grown, but the pea straw is shown by chemical analysis to be one of the richest kinds of straw which is produced upon our farms. It is now found by prominent feeders that, with careful management of the pea crop, the straw forms a very valuable article of food for their dairy stock, and also for other animals.

Vetches. These form a very rich food, but are not grown very extensively in Ontario, owing to the success of the pea crop which is usually a more reliable grower and produces a much larger yield per acre.

Beans. As a grain crop the California pea bean and the Navy varieties have given the best yields per acre. The Horse beans have been obtained from seedsmen from England, United States and Canada, but during the past two years they have proved a failure on our trial grounds as the leaves and stems would turn black in the middle of the growing season.

Cow Pea. The Cow pea is extensively grown in the southern states for green forage and hay, but specially is the crop grown to be plowed under to enrich the soil. A number of varieties such as Black, Clay, Whip-poor-will, etc., are grown. In three or four years' experience with the Cow pea in the trial grounds at the Agricultural College we find that they are too late in reaching maturity to become a successful crop in this climate, as they very seldom reach the flowering stage.

Soy Beans. Several varieties of these beans were imported from Japan into the United States, and, after being grown there for some time, we obtained five of the earliest ripening varieties from the Kansas Experiment Station. Among the five there are only two that have proven a success during the past two years. The Edamame and the Yellow Soy beans have both reached maturity for two years in succession, and have produced a large yield of grain per acre.

Lupins. Among all the leguminous crops that are grown on the farm the lupin is one of the richest in nitrogenous material. In two years' experience, however, in Ontario it has proven to be a total failure. It seems only adapted to southern climates.

LUCERNE.

Lucerne or *Alfalfa.* Experiments have been carried on with this crop both at Guelph and over Ontario for a number or years, and we find that in some localities it will grow fairly well. When well established upon soil suitable for this crop it will last a number of years, and will often produce two or three or even more crops of green food per season. Its greatest value seems to be as a soiling crop, as it is apt to make an inferior quality of hay, unless harvested with great care. It is one of the deepest rooted plants that we have ; and it is found that there is a large amount of fertility obtained by this plant from the atmosphere and from the sub-soil. At the New Jersey Experiment Station it is found that lucerne, which produced crops annually for four years in succession, gave an average of 304 pounds of nitrogen, 50 pounds of phosphoric acid and 260 pounds of potash per year. These 300 pounds of nitrogen if purchased in the form of a commercial fertilizer would cost at least $45.

CLOVERS.

Among the varieties of clover which have been grown are common red, mammoth, alsike, yellow, white, and crimson. All of these, with the exception of the crimson, have been grown in the experimental plots at Guelph for a number of years, and all of them have been grown quite successfully ; but time will not permit more than the mention of the names of these varieties with the exception of the last in the above list.

CRIMSON CLOVER.

During the past few years we have heard a great deal about the crimson clover. It is grown very extensively and successfully in Delaware, New Jersey, and a few of the other eastern states, but our experience with this variety is as yet quite limited in Ontario. We have grown it at the Agricultural College for three years, and when sown in the spring it has proven fairly successful. It is usually grown to about one foot in height and possesses a beautiful crimson blossom. In our experience it has not produced a crop which would yield more than about one ton of hay per acre, and, as it is "an annual," it dies out each winter after the crop is removed. In many places it is sown in the autumn of the year, usually in the latter part of August or in September. In the warmer climates it generally comes through the winter well, and produces a good fair-sized crop in the early part of the following year. This can either be used as a green food, converted into hay or plowed under as green manure. Where it can be grown successfully in this way, it would certainly be a very excellent crop to grow upon the land. We have as yet had no experience in this line, but sowed about about three acres upon our winter wheat stubble in the autumn of 1892, and the young clover was about two inches high when winter set in. It will be very interesting to watch the results of this experiment; and, if successful in withstanding our severe winters, we will have one of the leguminous crops which can be grown upon the land between the time of harvesting a cereal crop in the autumn and the seeding of corn, potatoes, turnips, or rape in the succeeding year. Time will reveal the position which crimson clover will occupy in the agriculture of this Province.

MR. MORRISON: How long would this nitrogen retain its virtue in the ground?

MR. ZAVITZ: I simply mention that as an illustration to show the value of the nitrogen in the clover. Nitrate of soda if applied to an oat crop would practically be used up the first year. It is a very soluble fertilizer.

MR. MCCRAE: There is one thing I think that is worthy of careful attention with regard to this subject, and I think it will amount to something. Mr. Zavitz has told you how clover takes the nitrogen from the air and puts it into plant food, and how much better it is to grow a crop of clover than to buy nitrate of soda, which is very expensive. Grow your clover and get it in the roots by the tubercles getting on those roots. Now it is said if there is a lot of nitrogen in the soil that clover will use up that nitrogen before these bacteria start, and it is only when it needs it that the bacteria begin. The point that is being looked at from a scientific point of view is this, that if you sow the bacteria when you sow the clover seed you have there something that can take hold of the root and use the nitrogen and give a great result in the crop at once. But how do you do that? It is a new thing. It is the newest thing you might say. It is just being talked about. But the only way that is done is to take the seed, the ground or earth in which clover has been grown—for the spores of this bacteria are in that soil—and sow it with the clover seed, and you will get a far better result by sowing the bacteria with the clover seed than with the clover seed alone. Now I don't say it will actually do it always, but the bacteria helps the pea and the bean, beans especially. I know my father tried to grow the old country horse beans for years and years, and he could not succeed; but now I am told if you get a little of the spores of the bacteria that live on the plant root, that you can sow your beans and make them so they will stand our dry seasons and get a good crop. I don't know whether it is so or not, but I think there is great room for experiment in regard to it.

A MEMBER: Would you tell us or recommend what quantity to sow along with the clover?

MR. MCCRAE: It is all in the air yet, you might say; it is an experiment. I think, though, that it is something our experimental colleges ought to take up and carefully watch. But you all can grasp the idea. I don't know any more about it than you do

MR. ZAVITZ: It is an unsettled question at the present time. There are a number carrying on experiments along that line, but I am of the opinion that most of our soils in this Province have a sufficient quantity of these organisms. I noticed that the horse beans which we grew this year at the Experimental Farm germinated well, and grew successfully for a while. Then the dry weather came on, and they turned completely black. You could walk along a plot and see nothing but little stalks sticking up. Then when the fall rains came on they started a second growth and grew very luxuriantly. These plots were about two feet in height and as handsome plots of beans as I ever saw in my life, and when the frost came on they were just in bloom Now if it is on account of the bacteria, how is it that in the earlier part of the season the crop is a failure and later on when the rains come it is a success? You may say that in the dry weather the organisms in the soil don't work well; I have heard that stated, but if that is the case how is it that other leguminous crops near by upon similar soil grow very successfully during the dry weather? So that I think it is a question that is very unsettled, but of course we will watch very closely the investigations as they go on.

Prof. Robertson: I daresay that the microbes that are peculiar to any crops that are grown commonly are plentiful, but each of these crops seems to have its own peculiar microbe, which grows and makes these nodules on the roots. I attended a large convention down in Massachusetts lately, and my attention was called to this question by Professor Bruce, who was in Japan and brought some Soy beans from there with him with dust attached to the seeds. Being planted, he had a splendid crop for three years, while across in a neighboring state with soil somewhat similar, the experiment station had a complete failure in growing them. Then they got three bags of soil from the field where they grew, made it dry, and sowed it over the same field and got a splendid crop the next year. So that it is not only the favorable conditions for the microbe, but it is the getting of a supply of the microbe for that particular plant.

Mr. Zavitz: Well, can you explain how it was that these horse beans that we had this season at first became thoroughly black, and then when the rains came on they grew very luxuriantly?

Prof. Robertson: In my opinion the plant itself needs most of all to have the suitable conditions as well as the bacteria or microbe that grows on its roots. Now last summer in growing horse beans I found our plants with a tendency to blight in dry weather, but by having frequent cultivation we were able to arrest the moisture in the soil, and the bean crops responded to that as much as the corn crops, so that both the bean stalk and the bacteria on the root will respond to the supply of moisture. I think if they had a very thin light scuffling every second day the beans would stand dry weather as well as other crops. In the meantime they are very liable to hurt by dry weather. Both the bean plant and the microbes need to have moisture, and this can be got by surface cultivation.

A Member: Does the bean crop mature with you?

Prof. Robertson: It grows pods that are filled, but not with seed you can sow again. Around Montreal they have no failures, in my opinion largely because the soil there is permeated, almost saturated, with bacteria of the bean plant, and I think in many places it would pay our farmers to take small portions of soil from fields where beans had grown and sow it with the beans.

A Member: If that is the case, then if you sow beans after beans you ought to have a better crop than by rotation of crops. Is that sound doctrine?

Prof. Robertson: It is not according to common opinion, but common opinion is not always scientific.

Mr. Smith: My experience with horse beans for the past two years has been that they grow well up to the stage of blossoming, and at that stage about nine-tenths of the blossoms turn black, and perhaps the other tenth mature and give a crop of beans, though of course a very light one.

The meeting then adjourned.

SECOND DAY—AFTERNOON SESSION.

The meeting was called to order at 1.30, Ex-President McEwing in the chair.

THE FIFTH FORM IN THE PUBLIC SCHOOLS.

Rev. Dr. JACKSON, of Galt, read the following paper: I consider it no mean honor to have been invited to address this, the Agricultural Parliament of Ontario. Brought up in one of the very large cities, my whole life since having been spent in cities or large towns, I could not with grace speak on any of the ordinary themes which engage your attention. But your Institute has shown great good sense in bringing the theme on which I have been asked to speak before your body. Several friends, in a bantering vein, asked me what I was going to speak to the farmers about? I replied in the same humor "How to raise turnips," and thereby hangs a tale. Mark Twain tells us that in his early life he started a country newspaper in which he proposed to conduct a question drawer where farmers could obtain information regarding their work. The first question received was "How to raise turnips?" and the editor replied, with virgin innocence, that the way he raised them was to "get hold of the shuck with both hands and pull." That was the last issue of the paper, and the editor left town in a hurry, while numerous grangers were seen around the village with suspicious looking clubs. Well, Mr. Chairman, while I am not to speak to you in the line which Mark Twain followed, my subject does have considerable to do with raising turnips and every other kind of produce, for as the average culture of our agricultural population is raised there will be a corresponding rise in the culture of field and forest and garden, and best of all, we shall raise more men and of a better quality.

You will also permit me to congratulate you and the farmers of Ontario on the great and increasing improvement in general intelligence and culture among our farming population. This has mainly been of their own seeking and doing. And through the facilities afforded by the Agricultural Departments of the Dominion and Provincial Governments agriculture is rapidly rising as a science and in popular esteem.

Our population may be divided roughly into three classes—producers, consumers and middlemen. Of these, the most important are the producers, since from them and their work comes the wealth of a community. The producing class includes all who are engaged in productive industry, farmers, mechanics, etc. Of these, the farming class are the most important, as we depend on them for the staff of life. But, unfortunately, our public school system appears to mainly feed the third class—middlemen—which is by far the least important. Middlemen in their place are valuable and their ranks ought to be recruited with the best material; but productive industries ought to be proportionately supplied, and especially ought the ranks of our agricultural population be supplied by the best products of our educational system.

Another popular three-fold division of society is into the agricultural, the laboring, and the capitalistic. In our modern civilization labor and capital are necessary to each other. Labor is, however, the most essential. Capital cannot get anything without labor, but labor can make capital. This can easily be shown. Place a capitalist with his capital on an uninhabited island, and place labor without capital on another uninhabited island. Both the capitalist and the laborer would be deprived of many comforts and luxuries of our modern civilization, but labor would survive and accumulate capital, while the capitalist would starve unless he became for the time being a laborer. And in both cases the industry by which they would survive and through which they might at first accumulate capital is agriculture. The fundamental industry therefore is agriculture. And the intelligent and self-respecting agriculturist is one of nature's noblemen. But to be this in truth he must be educated, and educated along right lines and to an adequate degree. This Central Farmers' Institute is therefore not only interested in the raising of produce or stock but in raising men who shall be true sovereigns over nature, ruling it for their own good and the good of society.

There are two questions regarding our public schools which are of immediate interest to this Institute and the agricultural population of our Province. First, are our schools constituted so as to secure the best education possible for our agricultural population? And second, is the extent of education in our public schools sufficient for the needs of our agricultural population? Regarding the first question, which is not properly before us to-day, I would unhesitatingly answer that our public schools are not constituted so as to secure the best results for our agricultural population. The whole tendency of our educational system is to overstock the professions and industries which live by brain or wits. Some other time, should the Institute so far honor me, I would be pleased to speak at length on this phase of the educational problem. Enough here to say that a true educational system will follow along the lines suggested by nature. Man differs from the lower animals in possessing reason, morality, a voice, and a hand. A true education will therefore follow co-ordinately in these lines. We should not only educate the intellect but the moral nature, the voice and the hand. Were this course followed it would be more honorable to labor than to pick up a living by one's wits.

But my subject has to do with our educational system as we have it, and whether the Fifth Form should not be made compulsory in our public schools as the minimum of popular education. I unhesitatingly maintain that it should.

1. My first reason for this is that *the average of popular education would thereby be greatly raised and the commonwealth be correspondingly benefited.* The following statistics will prove this to a demonstration. They are collated from the annual reports of the Honorable the Minister of Education. I have the last report but have not had time to analyse it as I have done previous reports, but, from a cursory study of it, I believe it will bear out the conclusions drawn from previous reports. But one year ago last July an order was issued by the Department effecting a serious and significant change. A pupil may now continue in the public school the extra year called for in the Fifth Form, and by obtaining 50 per cent. of the aggregate marks and not less than 30 per cent. in any one subject of the Public School Leaving Examination shall be entitled to enter the Second Form of the high school, and should he fail of obtaining this proportion of marks but obtain 25 per cent. or over in each subject he may enter the First Form of the high school. This is a step in the right direction, and it is expected that before long the Entrance Examination will be done away with and only the Public School Leaving Examination on a Fifth Form basis used with the conditions of entrance such as now apply to it.

The report of the Hon. the Minister of Education for 1892 (only 1893 has been issued since; 1894 is not yet issued) shows that 79,357 pupils were in attendance in the Fourth Form of the public schools, but only 11,691 were in the Fifth Form. If the remainder of the pupils who left the Fourth entered the high schools or collegiate institutes, or even if a reasonable proportion of them did so, there could be no fault found with the system. But only 14,950 left the public schools to enter the high schools, leaving 53,157 whose education ceased with the Fourth Form. For every two pupils entering the high schools there are seven who leave school for good at the end of the Fourth Form. In order that this fact may be more clearly manifest I have collated the following figures from the report of the Minister:

School Attendance, 1890.

—	Counties.	Towns.	Cities.	Totals.
Kindergarten, etc.	75,908	17,766	18,243	111,917
First Form	52,394	10,303	8,348	71,045
Second "	66,511	12,064	12,328	90,903
Third "	71,652	12,050	13,379	97,081
Fourth "	60,594	9,678	9,085	79,357
Fifth "	8,755	740	2,196	11,691

School Attendance, 1891.

—	Counties.	Towns.	Cities.	Totals.
Kindergarten, etc.	76,913	16,999	14,739	108,651
First Form	51,965	9,942	8,639	70,546
Second "	64,326	12,285	12,492	89,103
Third "	68,589	11,977	13,270	93,836
Fourth "	60,700	9,697	10,112	80,509
Fifth "	9,764	727	2,437	12,928

Leaving out the Kindergarten department these tables show that there is a steady increase in number of attendance from the first Form up to the Third, but in the Fourth Form there is a falling away and in the Fifth it almost disappears. The percentage of those who left the public schools in 1890 was :

—	Counties.	Towns.	Cities.	Totals.
At end of Third Form	15.43	19.68	32.08	18.25
At end of Fourth Form	83.91	92.50	75.80	83.94

These figures show (1) that in the cities a much larger number of pupils leave school at the end of the Third Form than in towns or counties, probably because there is a much larger number of very poor people in the cities and more numerous opportunities for children engaging in remunerative employment, and possibly also because there is more truancy on the part of children, and disease, crime and ignorance on the part of parents. But the special teaching of these statistics is (2) that the public school is the people's school ; and (3) that there is something seriously wrong in a system which turns out over 92 per cent. of the pupils from town schools without an education higher than the Fourth Form affords.

No doubt a large number of pupils drop out of school as soon as they pass the age of compulsory attendance. The parents of many are poor, and the children are started to work or apprenticed to trades ; or the parents are in poor health and the girls are kept at home to assist in housework and the boys on the farm or in the workshop. But making all allowance for the operation of the law of necessity and for the culpable neglect of parents, it hardly seems reasonable that only from 14 to 18 per cent. should drop out of the public schools at the close of the Third Form and over 83 per cent. at the close of the Fourth. And if we take account of those entering the high school, there are still found to be 66.42 per cent. in 1890 and 62.39 per cent. in 1891 who ceased attending school altogether at the end of the Fourth Form.

If we take the number attending the Third Form as a basis of comparison the failure is shown to be still more serious. In 1890, 72.55 per cent. of those attending the Third Form dropped out of the school altogether without anything higher than the Fourth Form afforded. And if we add to these the 6,732 children under 13 years of age who did not attend any school, it would appear that no less than 79.49 per cent. of the children of this favored Province receive only a Fourth Form education or less. The report for 1891 shows a slight improvement here. The corresponding figures for the year are : 67.73 per cent. of Third Form pupils go no further than the Fourth ; and adding the 4,516 children under 13 who are out of school there were 72.54 per cent. of the children of Ontario receiving no higher education than the Fourth Form afforded, and a large proportion of these did not even receive so much.

But we are not left to conjecture for an explanation of the sudden stopping of so large a proportion of the public school pupils at the end of the Fourth Form work. In accordance with the recommendation of the Department (see Regulations, p. 105, sub-sec. 3) 65 towns with high schools have no Fifth Form in their public schools, and 23 towns, having no high schools, have a Fifth Form. Manifestly these 23 towns are in a fair position to test the public appreciation of the Fifth Form in the public school. We have seen that 92.35 of the Fourth Form pupils in towns did not enter the Fifth, and that from 62 to 66 per cent. of the Fourth Form pupils neither enter the Fifth Form nor the high school. But if the 65 towns which had not the Fifth Form in their schools had been circumstanced the same as the 23 which had it, the decrease would only have been 48.88 per cent. in 1890 and 30.01 per cent. in 1891. This reveals the cause of the great falling off of pupils at the end of the Fourth Form. We are warranted in making this deduction. If the Fifth Form were the uniform standard of admittance to the high school, and if all public schools were required to provide it, nearly one-half of those pupils who leave school at the end of the Fourth Form would continue in it to the end of the Fifth, and the standard of popular education would be correspondingly raised.

If in the towns results so favorable would be secured by the change suggested, no doubt correspondingly favorable results would accrue in cities and country. That many educationists are in favor of the change is proven by the fact that six of the eleven cities and two towns with high schools have the Fifth Form in their public schools. But this is eminently unsatisfactory. It is "neither fish, flesh, nor good red herring." The Fifth Form should be compulsory in the public school and the standard of entrance to the high school.

The following additional figures tell their own story :

High Schools and Collegiates.

Year.	Number of teachers.	Expenditure.	Number of pupils.	Cost per pupil.
		$		$ c.
1867	159	124,181	5,696	21 80
1877	280	343,710	9,229	37 24
1887	398	495,612	17,459	28 38
1892	522	696,114	22,837	30 48
Increase in 25 years	363	571,933	17,141	....
Per cent. of increase	328.30	460.56	400.93	....

This is a magnificent showing for our high schools and collegiate institutes, and the Hon. the Minister of Education is well justified in congratulating himself and the Province on such an advance in higher education. But there is another side to the shield, as witness the following equally suggestive figures :

Public School Attendance.

Year.	First Reader.	Second Reader.	Third Reader.	Fourth Reader.	Fifth Reader.
1867	79,365	80,710	83,211	68,896	71,987
1877	152,002	108,676	135,824	72,871	19,857
1887	192,361	100,533	108,096	81,984	10,238
1892	187,947	96,074	99,345	88,934	13,370
Increase in 25 years	108,582	15,364	16,134	20,038	....
Decrease in 25 years	....	....	....	....	58,617
Per cent. of increase	236.81	119.03	119.39	129.08	-81.42

That is, while the school attendance shows a great increase in every grade except the Fifth Form—the First increasing *236 per cent.*, the Second and Third *119 per cent.* respectively, and the Fourth *129 per cent.*—the Fifth Form shows a *decrease* of over *81 per* *cent.* This is a startling as well as a suggestive fact. While there has been a great increase all along the line, both in public schools and high schools, there is this tremendous decrease in the number of pupils who enter the Fifth Form. This means to that extent a surrender of the modern principle of popular education. It means that the masses shall not receive as fair an education as it was the purpose of the founders of our public school system to give them. It means an ever-widening gulf between the classes and the masses. It really means the destruction of popular government. It means a reversion towards the middle ages. It means untold peril to society and the state.

But I am happy to be able to inform this Institute that the dark cloud which has settled over our public school system has a silver lining. as the following statistics will show:

Public School Attendance.

Year.	First Reader.	Second Reader.	Third Reader.	Fourth Reader.	Fifth Reader.
1886	192,020	98,511	108,360	80,574	8,031
1887	192,361	100,533	108,096	81,984	10,238
1888	192,417	100,474	109,191	82,942	10,349
1889	196.744	99,304	108,321	85,099	11.347
1890	196,790	97,817	104,340	85,234	12,384
1891	191,454	96,018	100,817	89,523	13,924
1892	187,947	96,074	99,345	88,934	13,370

The attendance on the Fifth Form reached its lowest tide mark in 1886, when only 8,031 pupils were found in that form of our public schools. Since then, however, while the attendance on the other grades appears to have been nearly stationary, the Fifth Form attendance has steadily increased until in 1892 it was one hundred and sixty-six per cent (166.47) greater than in 1886. This hopeful improvement is mainly due to the enterprise of public school boards or boards of education in such cities as Toronto, Ottawa, Kingston, Hamilton and Guelph, and towns like Galt, Lindsay, Parry Sound, etc., which have established and maintained the Fifth Form in their schools; and partly also to the Department of Education, which has recognized the injury done to popular education by the discouragement of the Fifth Form, and is now rather encouraging its re-instatement as an essential grade in our public school system. As I have already mentioned, a regulation was issued some eighteen months ago which has lifted up in importance the Public School Leaving Examination, the basis of which is Fifth Form work, and I have been informed that the Hon. the Minister of Education is expected shortly to do away altogether with the Entrance Examination and substitute for it the Public School Leaving Examination on the basis of the Fifth Form. No more salutary movement can at present be made, and all the true friends of popular education will hail it with heartiest welcome and approval.

2. A second reason why we should insist on the Fifth Form being made a necessary element in our public school system is that *it would enable many pupils to enter the profession of teaching* who under the present system cannot do so, and correspondingly tend to raise the grade of teachers. Comparative statistics show that the vast majority of the ablest and most useful men in the United States and Canada were born in the country and received their early education in country schools. Their health and physical and mental vigor were greater and better than in the case of children reared in cities and towns. Their food was simpler and more nourishing. There was less of social dissipation and unsanitary habits. And the graded country school was a better place to allow of the free play of individual genius and enterprise than the large and mechanically massed classes of city schools. And for precisely similar reasons country-bred teachers were as a class of a higher grade and more useful than their city-bred co-laborers. And under the old system a bright pupil could work for and obtain a third-class certificate in the ordinary country, village, or town school. Now, even the third certificate cannot generally be obtained without one, two, or even three years' attendance at the high

school,—too often a luxury beyond the reach of the most worthy and promising pupils in country schools. But, if the fifth form were compulsory in the public schools the number in attendance on it would be greater, the grade of the country school teacher would tend to a higher standard, and the advantage of the average country school to farmers and country people generally would be all the greater. There would be no inducement to leave the public school for the high school, and there would be no implication of poverty or loss of privilege in pupils remaining in it until almost ready to submit to the examination for third certificate. This would help forward many of the most worthy young people from the rural districts, and correspondingly not only help many most promising pupils into the profession of teaching, but raise the standard of popular education.

3. A third reason for the Fifth Form being made compulsory in the public schools, is that *it costs much less to do the Fifth Form work in the public schools* than in the high schools or collegiates.

The Province spent over five millions of dollars ($5,284,980 in 1890) for educational purposes. The average cost per pupil in our different schools in 1890 was as follows:

—	Counties	Towns.	Cities.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.
Public schools	7 38	9 70	14 46	8 76
High schools				30 91
Collegiate institutes				33 95

And in 1891 it was:

Public schools	7 25	8 92	13 27	8 34
High schools				31 61
Collegiate institutes				37 36

Or the comparative cost of each pupil is about as follows:

In counties ....19.40 per cent. of pupils in collegiate institutes.
In towns...........23.87 " " " "
In cities............32.32 " " " "
Average............21.81 " " " "

That is, it costs an average of over five times as much to educate a pupil in Fifth Form work in the collegiate as in the average country school; over four times as much as in the average town school, and three times as much as in the average city school. Now, I am not to be understood as reflecting unfavorably upon our system of high school or collegiate instruction. Nothing is farther from my intention. But, I do insist that it is very much cheaper to educate our children in Fifth Form work in our public schools than it is in the high schools. The latter have their own sphere and do the best work when keeping to their own appointed work.

4. A fourth argument is supplied by statistics showing the comparative *success of Fifth Form work as done in the public school* or in the high school. I cannot do better here than quote the weighty words of Inspector Reazin, in his able address before the Ontario Educational Association in 1893: "The greatest (drawback to the success of teaching in the high schools) is that the majority of their pupils come to them ill-prepared, and many of them immature as to age and mental development. Their public school education is incomplete—many of them even bad spellers. The result is that high school masters must engage in public school work with all their recruits, or else let the work go undone, which is more often the case. The parent of the recruit must pay high school fees for public school work whether the work is done or not, and which, if done, could have been better done in the public school; and just here we have an example of public school education in a free school system, which is not only not free, but for which we have to

pay a very high figure. This large class of ill-qualified recruits entering the high schools handicaps the high school masters, and is largely the cause of so much unsuccessful teaching being done in our high schools; and I affirm that there is a large amount of very unsuccessful teaching done in them. Does anyone ask for the proof? I have it at hand. The primary examination is the first test of the high school master's work. It is a test that no high school master can gainsay; because high school masters do the teaching; high school masters decide what candidates are sufficiently well prepared to venture their $5 and try their luck at the primary (I use the word 'luck' advisedly); high school masters set the papers; high school masters read the pupils' answers. The result is astounding. About two-thirds of the primary candidates throughout the Province fail. Everybody is astonished at the results; everybody wonders how it all came about. The high school masters themselves are disappointed and chagrined; and no one is more chagrined than the unfortunate candidates who have lost the $5 examination fee and their two years' labor, and their $200 or more for two years' board and their $24 or more high school fees. The parents of the plucked candidates are asking what it all means. Everybody is asking. The people of the Province want to know. Does it indicate a poor class of teachers? No. Does it indicate bad teaching? I think not. Does it imply unsuccessful teaching? Most certainly it does. Then, how account for it? Here is the answer: It is the raw material; it is the low standard of admission; it is the entrance examination; it is the high school masters attempting unsuccessfully to do public school work. . . . In support of these assertions, I have this proof to offer: A few pupils have had the good sense (or their parents for them) to remain in the public schools for a year or two after passing the entrance, and then go to the high school for a term; and it is a remarkable fact that scarcely one of these candidates is ever plucked at the primary. And here is another proof: In our county some half a dozen public school teachers still persist in preparing candidates for the primary examination, and with what result? Why, that they always succeed in passing a higher percentage of candidates than the neighboring high school or collegiate institutes succeed in passing. . . . . . And how is all this accounted for? Very simply. These two classes have been allowed to complete their public school education, which seems to be the only true foundation for any kind of successful study afterwards."

5. A fifth reason for the change advocated is, that *it would tend to stay the tide of population flowing from the country towards the towns and cities.* The standard of the entrance examination being the Fourth Form, pupils try it, and, when they pass, naturally feel that they ought to obtain the promotion which they have earned, and parents are tempted to favor their children. Why should my child be kept in the common school when his companions are in the high school? Consequently, many pupils take one or two terms at the high school who would not do so if the entrance examination were the Fifth Form work. But one winter in a town or city is enough to turn many a farmer's boy from the quiet life of the farm and country. He becomes unsettled, and is not satisfied until embarked in some occupation or profession in a city or town.

I have given five arguments why the Fifth Form should be a compulsory part of our public school curriculum. I have shown you that from seventy-two (72.54) to eighty (79.49) per cent. of the children of Ontario receive only a Fourth Form education or less; that twenty-five years ago, before the present system was inaugurated, there were actually four (4 29) per cent. more pupils in the Fifth Form than in the Fourth, and only thirteen (13 48) per cent. less than in the Third; and that, accepting the returns of the twenty-three towns which have no high schools and have the Fifth Form, as a fair basis upon which to estimate the improvement which would follow the change of public school standard to include the Fifth Form, nearly one-half of the pupils who leave our public schools at the close of the Fourth Form would remain in school to the close of the Fifth, which would correspondingly raise the standard of popular education throughout the province. I have shown that, while the attendance of pupils in the high schools has increased four hundred per cent. in the past twenty-five years, and the attendance on the public schools has increased in the different grades from one hundred and ninety to three hundred and thirty six per cent. respectively, there was an actual decrease in the Fifth Form attendance of over eighty-one (81.42) per cent. during the same period of twenty-five years, showing that the treatment of the Fifth Form was rapidly tending to lower the average of popular education and correspondingly imperil the state and society ; but that there has been a steady and decided improvement during the last seven years through the enlightened efforts of school boards, and that the Department is expected to make some changes in the line of this improvement. I have shown you that the change which I have been advocating would tend to help forward many deserving pupils in the rural districts ; would contribute to a more thorough grounding of candidates for higher education and correspondingly contribute to their greater success in advanced studies ; and I have shown that the cost of Fifth Form work in the public schools would be much less, while the work would be much better done. I shall now for a moment or two reply to objections which are popularly urged against the change.

1. *First objection: It would deplete the high schools.* There would only be a comparatively small number kept back, and the raising of the standard would restore the balance of attendance in a year or two, while the high school work would be much more successful.

2. *Second objection: It would increase the cost of public education.* But I cannot see how that would be. The same people have to pay all taxes, and if it costs less to educate in the public school, why, it costs less, that is all. I think it would tend to reduce the cost of education. although probably the tendency would still be to keep up the cost of the higher schools. This, however, is no good reason why the efficiency of the public school should suffer.

3. *Third objection: That the people are over-educated.* This is a great mistake. Popular evils which give rise to this criticism are occasioned by defective education or educational methods. Socialistic troubles in American cities arise from the vast masses of ignorant or imperfectly educated foreigners or natives. A true and adequate and popular education would enable the people to exercise their franchises in an intelligent way, and, in orderly methods, redress wrongs under which they may happen to labor. A sound education ought to enable all citizens to manage their own affairs with reasonable comfort and success, while at the same time it would aid them in seeing that no one class or individual can injure another class or individual without those causing the wrong suffering with them.

"To thine own self be true ;
And it must follow, as the night the day,
Thou can'st not then be false to any man."

4. *A fourth objection is, that it would demand a much higher standard of education on the part of the teachers in our ordinary public schools.* In reply, I would say that a higher standard in teachers would be a distinct gain in every way. Indeed, it is in the best interests of our schools that the standard be raised, and very materially raised. The schools are not intended to provide places for teachers, but for the education of the children, and this main object should always be first. Treat the teachers fairly and kindly, and support them liberally even ; but see to it that our people are properly and adequately educated.

5. *The fifth objection is*, that the introduction of the Fifth Form into all the schools as the standard would, in raising the standard of teaching, also *tend to raise the standard of salary ;* and inconsistent as it is, there is an opposite objection urged mainly by teachers that, *while raising the standard of teaching and in many schools increasing the work of the teacher, the pay would not be correspondingly raised.* Because of the last double-headed objection a great many public school teachers are opposed to the introduction of the Fifth Form as the compulsory limit of public school study. Like Othello, the occupation of many would be gone. But, the answer to all similar objections as well as to these now indicated is, that if we are going to continue our educational system for the people, we must make it reasonably adequate.

"A little learning is a dangerous thing ;
Drink deep, or taste not the Pierian spring ;
Their shallow drafts intoxicate the brain,
And drinking largely sobers us again."

6. *Another objection is, that the subject matter of the Fifth Form is more especially suited for specialists and those going forward into professional life, and therefore out of place in a public school.* I do not think the major premises in this objection are strictly correct. I think the entire Fifth Form as now modelled is within the plan of a public school which would give the children of the commonwealth such a common school education as should enable them to manage their ordinary business and pursue their ordinary avocations with reasonable comfort and efficiency. But, even granting the argument that some of the work of the present Fifth Form is more strictly for specialists and professional pursuits, the subjects objected to may easily be left out of the public school Fifth Form and referred to the high school First Form. That would be a matter of detail.

Mr. Chairman and gentlemen, I have looked at this matter from every side, and apparently all the facts of the case demand that the changes proposed be made at once, in the best interests of all our people and the commonwealth, and to no class more so than our agricultural population.

AGRICULTURE IN THE PUBLIC SCHOOLS.

Mr. JOHN DEARNESS, P.S.I., of London, then read the following paper on "Agriculture in Public Schools":

On two occasions able papers on the teaching of agriculture in the schools have been delivered at Provincial Conventions in Ontario, one by Mr. J. E. Bryant, M.A., before the Educational Association of Ontario in 1890, and the other by Mr. C. C. James, M.A., before the Trustees' Convention in 1892. Both dealt with the exceeding importance of agriculture as a pursuit in the country, viewed from the value of our agricultural products, the amount of the capital invested in agriculture, and the number of persons engaged in it. It is unnecessary here to magnify the importance of agriculture, so we proceed at once to the consideration of what the school system may do to promote its interests.

Mr. Bryant pointed to France as a country where scientific agriculture has had for thirty years a place in the course of study in the schools, and concurrently the average wheat yield per acre has greatly increased. He tells us that thirty years ago 22 bushels to the acre was considered a good average, now 33 is considered but fair, from 40 to 50 is expected and that even as high as 80 bushels per acre have been obtained.

Mr. James quotes a writer in the *Contemporary Review*, the Rev. William Tuckwell, who attempts to show the relation of cause and effect between the school garden and agricultural college of France, and the fact that 75 per cent. of its population is rural as against 33 per cent. in England. Doubtless many other causes contribute strongly to these results—so many and so strong that if England had done everything and France nothing towards the teaching of scientific agriculture, the latter country would still have a far larger percentage of rural population and a much smaller one of emigration. Yet it is significant that Mr. Tuckwell and others accord so much credit to the school garden and agricultural college for making the French peasantry prosperous and contented.

But it may be taken for granted that it is unnecessary before the Central Farmers' Institute to enter into a series of arguments to show that our schools can do something, should do all in their power to advance the status of agriculture.

Is the subject taught now? If so, how efficiently?

In attempting to answer the question, permit me to review briefly the history of agriculture in the schools of Ontario, for it has a history that dates back to 1871, and one of which I find that, prior to its being placed on the curriculum for the high school entrance examination in 1888, many well-informed farmers are quite ignorant.

HISTORY OF AGRICULTURE IN THE SCHOOLS OF ONTARIO.

The 13th section of the School Act of 1871 made it obligatory that certain scientific subjects should be taught in the public schools, and in defending the "new studies" the late Dr. Ryerson said, through the official *Journal of Education*, that "the subjects are such, and are prescribed to such an extent only, as is absolutely necessary for the advancement of the country in agriculture, the mechanical arts and manufactures—and when the cheap and excellent text-books prescribed are examined in connection with the subjects specified it will be found that nothing has been introduced which is impractical or for mere show, but everything for practical use and that which admits of easy accomplishment." The text-books referred to included Dr. Ryerson's First Lessons in Agriculture, which contained the course in chemistry, botany and agriculture for the public schools and for the junior forms of the high schools. Further he made provision for special certificates for the teaching of agriculture in the public schools. A course of instruction was laid down, an examination established, and first and second class teachers who passed this special examination and taught the subjects were led to expect that their schools would receive a special government grant; an expectation I have reason to remember, for it prompted me to qualify for and to pass the said special examination. An inflexible course of study was prescribed, and whether the teachers had studied agriculture and science or not they were directed to use the "First Lessons in Agriculture" in the highest three classes.

Beginning with 1871 the annual provincial reports show that there were put in the study of agriculture according to the lines laid down in Ryerson's First Lessons—

In 1871	5,723 pupils.
In 1872	11,773 pupils.
In 1873	22,617 pupils.
In 1874	15,045 pupils.

An Elective Council of Public Instruction was called into existence by the School Act of 1874, and, although the same Act directed the Council to provide for the teaching of natural history, agricultural chemistry, mechanics and agriculture, yet it must have taken cognizance of the adverse criticism of the text-book, and possibly, too, of the facts that many teachers were not trained to teach these subjects, and but few schools equipped for teaching them in a practical manner, for the rigidity of the course of study was relaxed, and the teachers practised a limited discretion in following it. Accordingly, we find the number reported in chemistry and agriculture in 1875, only 1,989 pupils.

The year 1876 saw the control of the Education Department pass into the hands of a responsible minister. A revised course of study was published in 1877, providing for the optional teaching of experimental chemistry with application to agriculture in the highest class in the public schools. Succeeding annual statements reported the number in chemistry and agriculture:

In 1877	3,965 pupils.
In 1878	1,902 pupils.
In 1879	1,665 pupils.
In 1880	1,574 pupils.
In 1884	849 pupils.

In the last named year the present Minister of Education took office, and in the first School Manual issued under his authority—the School Act and Regulations of 1885—we find the following direction:

Agriculture.

In rural schools the subject of agriculture should occupy a prominent place, such points being considered as the nature of the soil, how plants grow and what they feed upon, how farms are beautified and cultivated. The value of shade trees, what trees to plant and when to plant them, the relation of agriculture to other pursuits, the effects of climate upon the pursuits of the people. Poetical selections on rural pursuits and talks on botany and natural history, should form part of the instruction every Friday afternoon. In the new series of readers prepared under his direction there were lessons on the leaf, the flower, the fruit and the seed, in both the second and third, two on Canadian trees in the latter, and a capital one on agriculture in the fourth.

In the subsequent reports the number of pupils as studying agriculture were:

In 1886	1,558 pupils.
In 1887	1,602 pupils.

In the School Manual of 1887 the above direction is repeated, prefaced with the statement that the authorized text-book on this subject (Public School Agriculture, by Messrs. Mills and Shaw) should be introduced into every rural school.

In July, 1888, the subject was given an optional place as an alternative with hygiene on the high school entrance examination; then we find the numbers:

In 1888	2,064 pupils.
In 1889	2,549 pupils.
In 1890	4,393 pupils.

In 1891 candidates were permitted to take both agriculture and hygiene as optional and bonus subjects at the entrance examination; then there were reported as studying agriculture:

In 1891	15,787 pupils.
In 1892	18,401 pupils.

In 1893 both subjects ceased, in the interest of thoroughness, to be bonus subjects, the candidates taking them being required to make, as in grammar, arithmetic, etc., at least one-third of the possible marks. The statistics are not yet published, but judging from what I know of a few counties, I expect to find for 1893 a greatly decreased number studying agriculture, and for 1894, when it was not on the high school entrance curriculum, the number will probably fall back to two or three thousand. Just think of these tens of thousand of children studying agriculture evidently not for the benefit it would some day be to them on their farms, but to get into the high school or to have the name of passing the examination therefor.

This review of nearly a quarter century's teaching of agriculture in the schools shows two high water marks; once about 1873 when the Chief Superintendent said to the teacher: You should, and you must, teach this subject in the three highest classes from the text-book, "First Lessons in Agriculture"; and again when the present Minister said: You should, and if you do, along the lines of the first seven chapters of the new text-book, your pupils will be rewarded by a bonus at the high school entrance examination. The *should* has been in the regulations ever since 1871. When the compulsion was relieved by the more flexible course of study of the Elective Council, and again when the stimulation of a bonus at the high school entrance examination was withdrawn, the sequels show that a sentiment had not grown up which made trustees insist on the continuance of instruction in agriculture in their respective schools. The authorities have tried both compulsion and persuasion by turn, with admonition all along, and yet in the face of these facts I have heard people blame the "system" or the Education Department for its absence from the schools. Indeed, so far as the regulations are concerned, there is to-day the same obligation to teach agriculture as to teach reading, writing or arithmetic.

Perhaps not any one here is more anxious than I to see the principles of scientific agriculture taught in the schools, and yet I do not regret to see the attempts made to teach it by rote from text-books, with written examinations, fail. Arithmetic, grammar and literature may be taught in such a way, in fact usually are so taught, as to discipline the intellectual faculties and prepare the learner to some extent to grapple with the complex problems that confront the farmer. Some of you may not agree with me, but I have no doubt that a rational course in parsing, analysis, fractions, mensuration, etc., will up to the age of fourteen years better prepare a boy for success on the farm than the rote learning of any or all of the text-books I have yet seen on agriculture.

It may be useful here to examine what other countries have done in respect to teaching agriculture in their public schools. The opportunities afforded by the great educational exhibit at the World's Fair rendered it easy to get much literature on the subject. Suffice it to say that of European countries, so far as I know, France has done most, and to the reports of her methods and results I shall ask your attention for a moment.

Agriculture in the Schools of France.

The French Minister of Agriculture addressed a circular to the prefects on the 15th of August, 1887, from which I extract the following paragraphs:

"The importance, every day greater, which agriculture is taking in the economic position of nations has attracted to it much attention from the various governments.

"In France the least improvement in working and the smallest invention in machinery bring an augment in production, which means for the country an increase of its hundreds of millions of agricultural wealth.

"Parliament has not neglected aught to further private initiative; exhibitions, agricultural societies, publications, etc., everything has been done to maintain French agriculture in the position it has ever held. *Agricultural education, the surest and most powerful means of giving to improvement a new impulse*, has been specially considered in France."

The circular refers to the agricultural colleges and national institute and proceeds to speak of the "practical schools" established in 1873, open to the sons of the peasantry whom they receive from the public schools and maintain more cheaply than the colleges. In 1887 there were 19 of these schools, one in each of 19 out of the 86 departments forming the republic. These seem to bear the same relation to the agricultural college that our county model schools bear to the normal school.

The children who enter these must have a certain preparation, and it is necessary in agricultural districts to direct the courses of study in the higher schools towards agriculture.

"Hence," the circular continues, "we must organize in the public schools a course of instruction in the first ideas and the principal applications of science in reference to agricultural instruction over which the teachers must carefully watch, as *these are the bases.*"

After lamenting the lack of skilled teachers the circular points to what the Haute Savne Department has done by way of public scholarships, and concludes by directing each prefect to learn what his consul-general will do towards founding scholarships, organizing experiment stations and establishing agricultural courses in the colleges and higher schools.

Mr. C. C. James, in a paper referred to above, related the status the subject had reached at the beginning of the present decade. The French law of 1879 was going into effect as rapidly as trained teachers could be obtained. It was planned to have a special professor in every normal school by 1885 and to require the public schools to have agriculture taught in every one of them by 1888. This scheme would set 86 professors of agriculture at work, their salaries being borne equally by the district and by the Government. These were appointed to instruct the teachers in training, to assist at farmers' institutes and to supervise investigations when so directed by the Government. Many of the public schools have gardens attached, and all the normal schools were supposed to be provided with gardens. Work with agricultural bearing was prescribed for the different classes in the public schools; even the first class had something to do. Much emphasis was placed on the value of the school garden and the museum, and the teachers were recommended to take their pupils on visits to good farms and dairies.

At the last educational congress, held at Paris, M. Martel presented the report of the section devoted to agricultural, industrial and commercial education. Of the teaching of agriculture, the report stated:

"In primary education it was evidently impossible to make agriculturists in the true sense of the word. To children from six to thirteen years of age it is necessary through a scientific method to give a taste for things agricultural, to accustom them to habits of observation, and to make them capable of understanding what has been written for them in books. In the high school, however, the teaching of agriculture, while preserving a scientific character, might be largely developed; a special course in agriculture would be in place there, theoretical explanations being complemented by practical work either in a garden or a field for experiments."

The general congress adopted the following three resolutions based on the report:

1. The teaching of agriculture in the public school, often helped by lessons, exercises, and above all by the museum, the garden and the school expeditions, should be based primarily on simple experiments relating to the growth of vegetables.

2. At the high school the special course of agriculture and the demonstrations in the field for experiments should be adapted to local needs.

3. At the model and normal schools the teachers in training should be made competent to teach agriculture under the conditions enunciated in the two previous resolutions.

In the foregoing sketch the names used are not those of the French schools, but those of our own schools of the most nearly corresponding grade.

What Manitoba is Attempting.

Coming to this continent, we find that many of the states of the union have voted large sums to experiment stations and agricultural colleges. In 1887 it was estimated that not less than $5,000,000 had been contributed to these institutions by private donations, not to speak of the much larger national grants. Illinois over twenty years ago enacted that no teacher shall be authorized to teach a common school in that state who is not qualified to teach the fundamental principles, rudiments, primary facts and laws of the natural sciences. But it is to our own sister Province of Manitoba that we must look for the most advanced although but recent effort to give the study of agriculture a real position in the school course. That Province, with the usual promptitude which characterizes the succession of its action to the dictates of duty, instituted energetic measures to prepare the teachers and to equip the schools so that agriculture may be efficiently taught in the latter.

If success crowns the attempt much credit will be due the Rev. Dr. Bryce, the member of the Advisory Board, who appears to be mainly charged with the duty of carrying out the Government's wish. Like France, the prairie province has begun by the training of its teachers in the normal schools, aiming at qualifying them to teach the prescribed course in a practical manner and by the scientific method. Besides a set of colored charts, two supplementary reading books are projected. That supplementary to the third reader will be botanical, and the one to be read by the higher classes will be chemical and agricultural. The headings of some of the lessons in the supplementary third reader are: Plant Life in Manitoba, Flowers and Gardens, How to Tell the Flowers, Description of Thirty Notable Plants, Ten Noxious Weeds, The Trees of Manitoba.

This book is to cost twenty-five cents, and to be about the size of our second reader, and is not merely to be read, but also to be used as a guide book in the practical study of the plants and weeds, of which specimens are to be in the hands of the pupils. In future no teacher will be certificated at the normal school who does not show his ability to teach botany practically. Dr. Bryce has kindly informed me of the details of this plan. He says he has been experimenting with children of ten or eleven years of age, and he is satisfied that the work outlined above can be accomplished by them with interest and even delight. It will, he says, cultivate habits of observation, discrimination, accuracy of judging, and love for the plants and fields. This junior course, it is contemplated, will occupy one year, taking two lessons per week.

The supplementary fourth reader will open with thirty chemical experiments on air, water, wood, coal, clay, etc., and each school will be furnished gratis from the Education Department with a box of chemicals and apparatus for the experimental course. These boxes will cost the Government only $4 each, but they will contain sufficient material and apparatus for the course. As the material is used, the local boards will be expected to maintain the supply. Other titles in this book are: Growth of Plants, Soils and Climate, Tillage, Drainage, Crops, Rotation of Crops, Manures, Diseases of Crops, and illustrated articles on Live Stock, Dairying, Farm Buildings, etc. This instruction is to be given in towns and cities, as well as in rural schools. At the Provincial Normal School, Winnipeg, Dr. Bryce is giving, or has already completed, a course of ten lectures on botany and chemistry. Mr. Bedford, director of the Brandon Experimental Farm, will give five lectures on soils, tillage, crops and grasses, and Dr. Torrance, V.S, will give an equal number on horse, cattle and sheep husbandry. The substance of these lectures will be repeated at the six local normal schools, and next season, by direction of the Education Department, the Teachers' Institutes will be turned into schools for agriculture exclusively.

After this brief review of the best examples Europe and America have to show us, let us enquire what we in Ontario should do.

I believe that taken all round there is no more excellent system of public education in the world than the one that has been developed in this Province, and, while the contemplation of our success and the acknowledgments thereof in world-contests may justly stimulate our national pride and reward us for past efforts, our further progress must come from searching out and strengthening our weak points. Such examination and comparison with the systems of other progressive countries lead to the conclusion that our public school system is weakest on the side of the education of the faculties of observation, comparison, judgment, in short in the intellectual activities that may be well trained, and in fact trained best, by the *study of natural phenomena by the scientific method.* (An accessible reference in this connection is the Hon. Dr. Ross's Schools of England and Germany, pages 116-120, 177-178, 229-230, 239-240.) This kind of training, while particularly advantageous to the housekeeper and agriculturist, is helpful for every profession and vocation, and therefore should have a prominent place in the city schools as well as rural ones.

Here are the words of the illustrious Agassiz at a national meeting: "I wish," said he, "to awake the conviction that the knowledge of nature lies at the very foundation of the prosperity of nations; that the study of the phenomena of nature is one of the most efficient means for the development of the human faculties, and that, on these grounds, it is highly important that this branch of education should be introduced into our schools as rapidly as possible. . . . . . The only difficulty is to find teachers equal to the task, for, in my estimation, the elementary instruction is the most difficult. It is a mistaken view with many that a teacher is always efficiently prepared to impart the first elementary instruction to those entrusted to his care. Nothing can be further from the truth, and I believe that in entrusting the education of the young to incompetent teachers, the opportunity is frequently lost of unfolding the highest capacities of the pupils. . . . . . I have been a teacher since I was fifteen years of age, and I am a teacher still, and I hope I shall be a teacher all my life. I do love to teach, and there is nothing so pleasant to me as to develop the faculties of my fellow beings who, in their early age, are entrusted to my care, and I am satisfied that there are branches of knowledge which are better taught without books than with them, and there are some cases so obvious that I wonder why it is that teachers always resort to books when they would teach some new branch in their schools. When we would study natural history instead of books let us take specimens—stones, minerals, crystals. When we would study plants, let us go to the plants themselves, and not to the books describing them. When we would study animals, let us observe animals."

Dr. Lyon Playfair was a most eminent British scholar and educator. Listen to what he avers: "The pupil must be brought in face of the facts through experiment and demonstration. He must pull the plant to pieces and see how it is constructed; he must see water broken into its constituent parts and witness the violence with which its elements unite. Unless he is brought into actual contact with the facts, and taught to observe and bring them into relation with the science evolved with them, it were better that instruction in science should be left alone. For one of the first lessons he must learn from science is not to trust in authority, but to demand proof for each asseveration. All this is true education, for it draws out faculties of observation, connects observed facts with the conceptions deduced from them in the course of ages, gives discipline and courage to thought, and teaches a knowledge of scientific method which will serve a lifetime. Nor can such education be begun too early. The whole yearnings of a child are for the natural phenomena around, until they are smothered by the ignorance of the parent. He is a young Linnæus roaming over the fields in search of flowers. He is a young conchologist or mineralogist gathering shells or pebbles on the sea shore. He is an ornithologist, and goes bird-nesting, and icthyologist and catches fish. Glorious education in nature, all this, if the teacher knew how to direct and utilize it. The present system is truly ignoble, for it sends the workingman into the world in gross ignorance of everything that he has to do in it. The utilitarian system is noble in so far as it treats him as an intelligent being who ought to understand the nature of his occupation, and the principles involved in it. If you bring up a plowman in utter ignorance of everything relating to the food of plants, of every mechanical principle of farm implements, of the weather to which he is exposed, of the sun that shines upon him and makes the plants to grow, of the rain which, while it drenches him, refreshes the crops around, is that ignorance conducive to his functions as an intelligent being? . . . . Under our present system of elementary teaching no knowledge whatever bearing on the life work of our people (English) reaches them by our system of education. The air they breathe, the water they drink, the tools they use, the plants they grow, the mines they excavate, might all be made subjects of surpassing interest and importance to them during their whole life. Yet of these they learn not one fact, and we are surprised at the consequences of their ignorance."

An authoritative document, the report of the British Royal Commissioners on the National School system, states :

" We think it established that the study of natural science develops better than any other studies the observing faculties, disciplines the intellect by teaching induction as well as deduction, supplies a useful balance to the studies of language and mathematics, and provides much instruction of great value for the occupations of after life."

Fully accepting the above conclusions, I am not sorry that our attempts to teach agriculture by rote from books has not satisfied either the people or the teachers. Agriculture is a very complex applied science ; it is founded on the circle of sciences, the chief of which are meteorology, geology. mineralogy, physics, chemistry, botany, zoology, including entomology. Every farmer, whether he knows it or not, is an applier to a greater or less extent of every one of these sciences, and something of a machinist to boot. Indeed, some add astronomy to the list, for do they not sow their peas and kill their hogs at a certain phase of the moon, and cut Canada thistles at a favorable conjunction of the planets in June. The farmer all his life must be a practical student of these sciences. How important then that the schools should start him with scientific methods of investigation.

Nature should be the text book, the teacher should be merely the director and maintainer of the attention. It is true we have object lessons in our schools, but if these, as too often they do, end with cataloguing qualities, the result is chaff and not wheat. The observation faculties are not trained by mere observing, but by reasoning about what is observed. The eye sees the object held before it, but trained scientific observation sees more or less of the history of that object stretching away back into the past or attempts to measure its future possibilities. I should rather have my child reach ten scientific conclusions by his own efforts (observations) wisely directed than to acquire a thousand by remembering *ipse dixits* of teacher or text-book. For example I propounded the question, " Whether is the dew heavier on calm or on windy nights?" After three observations the child said " on windy nights," giving her reasons. Even that result I thought much better than if she had looked in a book and read the opposite statement. I told her to continue watching and writing each morning what she noticed. The farmer needs to use his eyes and reach correct judgments from his observation ; so does everybody else. Hence nature study should form an important part of every school curriculum from the first to the highest grade. Progress in this kind of education cannot be tested by the ordinary written examination upon a set of formal questions prepared for all the schools of a county or a province.

By nature study I mean that development of mental power and habit which comes with knowledge gained by observation and experiment, and by comparison and relation of causes and effects of phenomena that appeal to the attentive senses no matter in what field of science so called these phenomena lie.

Gentlemen, do you agree with me that education by the scientific method in the sciences that subserve agriculture and domestic economy and in those parts that serve these arts best and most is what we need in our schools? Then inaugurate a propaganda to educate the public to require *method* as well as matter. The system of written examinations in vogue might test how much of a text-book in agriculture the children had memorized, but it cannot test how they are being taught to observe scientifically. That was a capital paper by E. A. Powell in last June 15 and August 15 of the *Farmers' Advocate.* I hope you read it. You may remember his argument that readjustment of the public school courses of study will enable us to make farming much more profitable—that the "study of horticulture and biology will aid materially in this direction. But there is quite as much advantage in chemistry and in farm economics. Farming will pay when it is done understandingly, intelligently, lovingly, with a knowledge of the forces we deal with and the things we handle. At present the bugs understand us better than we do them. They have little to learn, but they have learned that little well." He proceeds to show that "one-half the production of American lands is lost through ill-directed education. Our apple crop is more than half lost, and this is pretty surely true of all other fruits, except, perhaps, small fruit, which cannot be grown at all except with special attention. The plum trees over large areas of the northern states have been cut down, or ought to be, to get rid of black knot. The cherry trees were also assailed fifty years ago, and gradually eliminated by the same disease. The curculio spoils yearly tens of thousands of bushels of both these fruits. Remedy—more knowledge of entomology and of tree life itself. Give that, and the snap and backbone will be found. The farmer is rarely a lazy man; his trouble is, he does not know his enemies, or how to fight them. He does not know his friends from his foes in the insect world, and is as likely to destroy the former as the latter."

He inquires how can this desirable result be obtained? How can we secure for our rural schools teachers competent to teach geology, chemistry, biology and physics? He answers his questions thus: "When the demand comes we shall surely have the supply? But let us not make the mistake of supposing these to be more abstruse or difficult studies than geography, arithmetic and grammar. Rightly taught these latter are far the most difficult and advanced; they belong only with older pupils. The former sciences are simpler and more fundamental. They deal with every day questions and things near at hand. . . . . Science as entomology, for instance, deals with butterflies and bugs—just what children naturally take to. Science as botany deals with flowers, fruits, roots, trees—just what all children like. Science as geology deals with the dirt and stones and brook beds—just what children love. Science as chemistry pulls things to pieces and reconstructs; as physics, it plays with sunbeams. This is not at all abstruse. We want just as little as possible to do with books while educating a child."

Develop a strong sentiment in favor of nature-study in the schools and that sentiment will demand competent teachers. The present ruling question, "Who will teach our school the cheapest?" will give way to "Who will give us the best value for what we can pay?" Mr. Powell, quoted before, says:

"So utterly impossible has it been for myself to secure my children what I call a rational educational, that I have done what I regret many more do not do or cannot do,—have built a laboratory and employed private tutors. Here they enjoy with a zest drawing, geology, biology, chemistry, mathematics and music, with, as far as possible, field work. These studies are followed by a general knowledge of life on the globe, as well as the history and science of human language and thought. At this point geography becomes a rational part of education. The result has been more than satisfactory. They love the land and the things of the land. I am confident they will never consider land culture inferior to traffic. Their minds are here because their acquaintances are here. Their souls are with the birds, the plants, the animals, the bugs."

The sentiment I speak of will give us not only trained teachers, but the necessary means and appliances for doing the work properly. There must be apparatus and materials; fortunately these are inexpensive. I have spoken of the outfit at $4 to be furnished each of the Manitoba schools; and they are also to receive a set of colored charts of plants and animals. A compound microscope as well as a simple one should be added.

Then the school garden, with gardening implements, is almost indispensable; a little plot convenient to the play ground, but better not a part of it, where germination, growth, fertilization and even hand pollenization, grafting and budding may be observed and practised. Could not the agricultural societies give prizes to encourage school gardening? I see no difficulty in the way if the competition were limited to townships or inspectorates.

I have said so much against text-books that I ought to make it clearly understood that I am not opposed to seeking assistance from books. On the contrary, every school should have a few science reference books. I oppose those lesson books to be placed in the children's hands, liable, almost certain, to be learned by rote. I favor books that are investigation guides. Of the latter, as being the best I know, I have laid on the table Howe's Systematic Science Teaching, Jackman's Nature-study, Harlan Ballard's World of Matter, Spalding's Botany and Colton's Zoology. These, and doubtless others I do not know of, should be within every teacher's reach. It is, however, easy to see that a graded series of say two or three small books—scientific investigation guides—prepared expressly in the interest of agriculture would be different from any of the above, although similar in plan to the two first mentioned.

The material for instruction is overwhelmingly abundant; most children start to school with a taste and aptitude for such learning; skilful method on the part of the teacher is the desideratum. "As I write these suggestions (to the teacher) I fully realize the struggle it will cost you to keep silent about all the interesting things there are to be told, but that word 'told' lets out the whole mischief." (Howe's Systematic Science Teaching, p. 167.)

A COURSE OF STUDY.

The following is an outline of a course of study that might be taken up in the public schools:

First Class. Observations upon and conversations about common objects, such as utensils, articles of food and clothing, etc.; classifications as of houses, fences, books, etc.; sorting metallic articles, seeds, leaves, etc.; observations on the weather, skies, seasons, etc.; talks about plants, animals, etc., that can be brought to the school or that the pupils have experience with.

Second Class. Observations, of which a daily record is made, of direction of wind, cloudiness, rain, snow, dew, hoar frost, etc., and practice in forming judgments upon the observations, as, *e. g.*, answering the question, "What directions of wind usually bring rain?"; sorting objects, as fibres, minerals, etc.; classifying objects as tools, plants, animals, on the basis of their uses, observations on the seasons, changes of the moon, position of the sun; elementary systematic instruction with objects at hand upon seed, leaf, flower, fruit, etc.; geography of the school grounds and neighborhood.

Third Class. Observations on weather, temperature, changes of the seasons, recorded daily and judgments deducted therefrom; migrations of birds, habits of animals; classification of woods, soils, fruits; comparison of minerals as to qualities such as hardness, lustre, etc.; plants continued, description, development, and functions of organs, relations to soil, moisture, shade, introducing tillage and drainage; elementary systematic study of the organs of animals; simple experiments in physics and chemistry, local geography of neighborhood, township, county; government of school section, township, county.

Fourth Class. Meteorological record continued with notes, as opportunity offers, on such classes of facts as the effect of frost on soils, buds, etc.; migration of birds, opening of familiar wild flowers, first appearance of familiar insects, such as potato bug, tent caterpillar, grasshopper, etc.; plants continued, comparisons of organs based on examples as various forms of roots, stems, leaves, flowers, fruits, seeds, life history of plants such as of potato, wheat, strawberry, apple; talks, and practice if possible on thinning, pruning, grafting; comparison of animal organs, function and hygiene; experimental physics and chemistry continued, aiming at teaching the physical properties of matter and simpler chemical facts of air, water, lime, salt, sulphur, etc.; soils and manures.

Fifth Class. Meteorology, farm calendar, recording time of operations, times and effects of unusual colds, heat, drouth, winds; observations upon the openings of flowers, setting of fruits and visits of insects; plants, use of key in identifying plants, life histories, observations on injuries from insect and fungal parasites; growth, form, decay of trees; weeds, their means of spreading; entomology, studies (from specimens) of metamorphosis of insects; life histories of insects; physics and chemistry continued experimentally with a view to application to agriculture; visits by arrangement to good farms or to dairies in the neighborhood to study live stock, farm buildings, laying out fields, or farm or dairy processes.

If France's experience has a lesson for us, results of great importance should be expected of the high schools. If these institutions were to devote as much money and energy to teaching scientific agriculture as they do to the preparation of entrants to the professional and commercial pursuits, they would doubly and trebly repay to the agricultural interests the large grants they now receive from the counties, and they would contribute towards a signal increase of the profit and pleasure of life on the farm.

Inspector Smith, of Wentworth, proposed a scheme to set apart one school in each township to be equipped at the expense of the township with an extra teacher, who would give a graduation course specially adapted to farmers' sons. If the classes were established they should be taught by graduates of the Agricultural College holding a teacher's certificate.

Elementary science properly begun in the public school, continued and strongly specialized towards agriculture in the high schools, would increase the attendance of better prepared candidates for our Agricultural College. The present one is admitted on all hands to be doing excellent work. The number of these would have to be increased to meet the demand. This duty would devolve on the Government, also the duty of providing a practical course in the model and normal schools and of sending experts on matter and method to the Teachers' Institutes. The Hon. Mr. Dryden's scheme of offering a special summer course for teachers at the Guelph Agricultural College should meet with much favor.

In the paper by Mr. Bryant, first quoted, he argued very cogently that a course in scientific agriculture affords disciplinary training for the mind, it offers scope for the aesthetical and ethical training, and it is above all utilitarian. If to such a course were added reading, literature and arithmetic with suitable provision for expansion—by language oral or written, drawing, and making in clay and wood—and in the fourth and fifth classes in the public schools history and world geography, with good morals acquired by constant practice and incidental precept, with careful attention to the health and growth of the children throughout, then I think we should have an ideal system of education.

I am addressing the most representative body of farmers in the country. Does it not behoove the Central Farmers' Institute—the Farmers' Parliament—to do more than to listen to the reading of the papers on this most important subject? Can you not issue educational bulletins broadcast throughout the land? Would not a committee appointed to consider and draft a scheme and confer with the Ministers of Education and Agriculture stimulate efforts towards practical results? I tell you what you know, that people do not take kindly to innovations that they regard as forced on them from the central authority. Lead the people to demand the improvement, then they will welcome it. It was the clamor of the farmers' institutes that moved the government of our sturdy neighbor on the northwest to provide a course of agricultural instruction in the public schools. There the people, I am informed, now are receiving it with enthusiasm. Let us copy the example of Manitoba in this matter, and although she has the start of us let us enter into a race with her for the best results.

I conclude with a sentence from Farmer Powell's article, that the all-important point is to have in our schools a curriculum of study that will make our children acquainted with the land and what is on the land ; an education that unfolds the nature of soils and the wonders of life in and on the soils ; and, while bewitching them with the everlasting unfoldings of such studies, makes it possible for them to master their foes and to receive the benefits of insect, bird and plant friends. This done, no other occupation can compare with farming for its charms and advantages.

DAIRY FARMING IN ONTARIO.

Professor J. W. Robertson, Dominion Dairy Commissioner, Ottawa, then delivered the following address on "Dairy Farming in Ontario" : Both of the speakers who have addressed you this afternoon have been complimenting you on being the "Agricultural Parliament of Ontario." Let me congratulate you in one regard : you have very much better manners than members of Parliament. If you had occasion, as I sometimes have, to sit in the House of Commons and watch how members of Parliament behave when they are there ostensibly attending to your interests, you would go home proud that you were not under their influence or liable to be contaminated by the example they set. I will tell you how I was treated once by members of Parliament. They came to the Experimental Farm in a body and I was to address them on the barn floor. That was shortly after I went to Ottawa and I was in great trepidation,—being a good deal more afraid of a member of Parliament then than I happen to be now. I mounted a cane bottom chair and felt that the chair and my knees were alike rickety. When I began to talk every other man began to talk to his neighbor—just as they do in the House of Commons. I had been brought up to believe that to interrupt private conversation was a breach of good manners, so I stopped a little and they doubtless thought I was breaking down—which I came very near doing. Then I told them of an experiment we had tried the previous year in growing potatoes. We had two hundred varieties of new seedlings, and one of our young men in an effort to give a variety some excellence in name that might carry it over any deficiency in quality and character called it "Members of Parliament." I believe if you read the report of the experiment with Members of Parliament on our farm you will find it recorded that they were "nearly all small potatoes." (Laughter.) That was the conclusion of scientific investigation. So I am not going to speak to you as members of Parliament, but as dairy farmers, or men who should be dairy farmers.

If there is a man here who owns land in Ontario and is not a dairy farmer he ought to reconsider his ways and become one for his own sake and the sake of his province. Dairy farming is in a state of change. It is in a state of change, because you are in a state of change. Everybody here is what he is to-day, because he was what he was yesterday. To-day is only the aggregation of all the yesterdays, and you could not have to-day as it is without the yesterdays. Dairy farming is the natural outcome of the kind of farming we have been following. At the very beginning we had in Ontario that kind of agriculture which required mainly muscular strength, and powers of physical endurance.

The meaning of the word *Agriculture* is to cultivate a field, from the Latin words *agri* and *cultum*. In the early days agriculture required strong muscles : it meant power of endurance, and almost the only economy was to rigorously do without things. But now a change has come, and instead of the economy of doing without things we should have the economy of making the best use of everything we can control from our minds down to our hands. That brings me to say, that from the primitive methods of farming we have come to a system of diversified agriculture requiring first of all intellectual management—not strong bodies but cultured, clear minds. For the farming we pursue now, reading is a branch of agriculture, for a man's mind is not cultured unless he knows how to read. It trains certain faculties which enable men to do business in business-like ways ; and agriculture in the form of dairy farming is first of all a business. It is the dealing with products and making profit out of the transactions—handling cornstalks and selling butter; buying corn ensilage from the fields and the silo and selling it as milk or more concentrated products to his customers and making money by these business transactions. Further, to carry on that business successfully he must know his trade. A man does not go to school to learn how to plane boards, he goes to a work-shop and learns his trade. He may understand better how to build houses with boards if he understands architecture and mechanics, still he can be a good carpenter without knowing much of these. Dairy farming is also a trade; and because few men are good tradesmen among dairy farmers just so far have the profits been small from dairy farming. We have ignored the trade part of our business. Dairy farming is a profession in so far as it has to do with controlling the forces of nature in their application to our tasks and making them act in willing submission to our judgment according to their own laws.

That leads me to say that the need of the dairy farmer of Ontario to-day is, first of all, the habit of thinking clearly about his own business, and a farmers' meeting like this is one of the means by which profits are made to increase on farms, because here men learn to think clearly about their own business. A man can never do work well where the task is difficult unless he knows what he is trying to do. A man cannot know what he is trying to do or how he ought to do it unless he first thinks clearly about his own business. If you reflect for a moment on the comparative value of things, you will see that clear thinking is the highest kind of power a man can exercise. Now, here is a pound of fine butter—I brought it to show you the box it is in and not the butter—and if you trace back through the box and through the churn, and through the separator and through the cow and the cornstalks and into the soil, back up to the sunshine, you will find that the controlling, directing power was some man's clear thinking. Not some man's strength of body, but some man's clearness of mental vision. If we see things in the right proportions and relations we think clearly; if we don't see them in the right proportions and relations we don't think clearly. Next to that, we need a fund of exact information, reliable information, and also applicable to our own conditions. Sometimes farmers are apt to "pooh pooh" the value of experimental stations. Now, I never apologize for being connected with experimental dairy stations; I glory in having them under my care. We don't know anything in agriculture that didn't come from somebody's experiment. You have the experiment first, then you have the experience, and then you have the knowledge; and you get it no other way. A man does not know anything because I told him—not for sure. (Laughter.) But if he puts anything I do tell him to the proof, then he is sure to believe that what I told him was right, because he will "prove all things and hold fast that which is good." The fact is every farmer has been experimenting, but experimenting often in an unsatisfactory way because he did not know how to control the agents and conditions. Some man feeds two cows and says, "This one does better on this feed than on that feed," but does not weigh the feed, the product and the gain or loss in the test; therefore his experiment is unreliable. The object of an experiment station is by experiment and experience to gain exact information. The meaning and cause of progress is every man saying, "I want to know." Some ten years ago, when I went to the first farmers' institutes, I found a small company of men, many of whom were there not to learn anything, but to triumph in showing how completely they could down "that young fellow who came to tell them something that they did not know." Now, the spirit and action that says, "I want to know" is the motive power for all real progress. Curiosity creates all science—"I want to know, therefore I will try to find out." Let me interject a word here about the value of knowing how to farm as it can be learned in a school or learned at home. I don't want to distract your minds from the excellent thoughts which have been presented by Rev. Dr. Jackson, but I want to say that in my opinion if the farmer would teach his boy about the soil as far as he knows it himself, and about cows and sheep and swine and crops and fruits and insects and trees and flowers, until the boy is ten years of age, and never let him see the inside of a school book until after that time, he would make a better citizen for all practical purposes than by going to school at six and vaulting over the examination hurdles of even the fifth form at twelve or fourteen. I have watched these boys that come from the country and rise to some eminence; we often credit it to the country homes, but we should often credit it also to the fact that the boy was educated in a natural way. The natural method is to learn through the senses first. To touch, taste and handle; a baby puts everything into its mouth, or tries to; and by that means he is learning to use his faculties. Real education is begun when the child is very young and a continuance of it on similiar lines, leaving the study of abstract subjects until the child is past ten, might be most beneficial.

If there is one word I have to say about our too-much lauded school system it is, "Don't let us try to manufacture babies into boys, and boys into men by a system of school education that is in itself not wholesome." Do you know what has hindered dairy farming from making the progress it should have made in the past? It was the pride of somebody's established conviction, not the humility of the man who was anxious to learn what was best. We want to know, and know exactly, what is best for us as dairy farmers.

Then we need added to that, persistent energy in labor. You say, "Oh well, I wouldn't follow dairy farming; it means seven days' work a week because the cows are always to milk." Well, now-a-days, if a man is not willing to work as long and as hard and as well as he can, he will not get good pay for his labor. Now-a-days a man has to work hard, therefore I commend dairy farming as being a capital thing, because it involves hard work and involves something else, the giving of something for something—a *quid pro quo*—an equivalent for every dollar received My own appreciation of the virtue of labor is voiced in the old rhyme we used to have in our school days, "Satan finds some mischief still for idle hands to do." If a man is idle he will go to the devil, and so will his business; and that is where a good deal of the farming of Ontario has gone. (Applause.) Why? Because not more than one man out of three in Ontario keeps his hands busy for more than six months in the year at productive labor on his farm. But the one man in three who has been doing that is not feeling hard times to-day. He says, "I pay my way, and I have more money than ever I had before from my business." Down at the Kingston Dairy School we gave one man last month $133 for the butter-fat in his milk, and besides that he had all the skim milk at home for his calves and pigs. He doesn't find it hard times. And so we are in a bad plight because we have been keeping our hands busy for only six months in the year growing crops. If we had kept them busy the other six months making the crops into milk and butter and cheese and pork and poultry and beef and mutton, etc., we would have had twelve months' employment and twelve months' pay. But we will come to that, I hope, after a while.

Then we need—and this will be the last abstract proposition I will put before you—intelligent economy in management. The difference between John who lives here and Tom who lives over there, is not in the land, and is not in the climate and is not in the roads and is not in the market—that is blamed for so much and guilty of so little—but in the management. This man does well because he manages well. I will find you instances all over the province where men are doing well all the time because of managing well all the time, and other men doing badly all the time because of managing badly all the time. Intelligence will rule in any sphere and intelligent management will always help a man to success. Now, economy is intelligent management. It is not meanness, but it is a wise use of all that a man can control, from his land up to his time.

$$\left.\begin{array}{l}\left.\begin{array}{l}\left.\begin{array}{l}\left.\begin{array}{l}\text{Soil}\\ \text{Climate}\\ \text{Water supply}\end{array}\right\}\text{Plants}\\ \text{Building materials}\end{array}\right\}\text{Cattle}\\ \text{Available labor, quality, cost}\end{array}\right\}\text{Products}\\ \text{Market price}\end{array}\right\}\text{Profits}$$

I have put on this chart on the wall an arrangement of words to show how in the keen competition that now presses on us from all sides, the people of Ontario can make their success most assured. They can do that through dairy farming, because we have in dairy farming a means of realizing upon all our resources. Now the resources of a country and the wealth of a country are not always in exact proportion. Ontario is a province of unsurpassed resources for agriculture, but I am not quite sure that by any means she stands unrivalled for agricultural wealth, because the wealth that is available and the resources that may be realized upon are two different things. We can realize best on these and turn them into wealth through dairy farming. If we had done that we would have been the richest people per head of any agricultural population in the world and when we do realize upon our resources, we will have wealth that will be sufficient if not unequalled.

Now take a glance over this chart with me. We have a fairly fertile soil, very fertile in many places, and a salubrious climate capitally adapted for the growth of many plants; and we have an abundant water supply, and these three are the controlling factors in enabling us to produce or grow plants to advantage. . But we have not soil any richer than the prairie province of Manitoba—nor so rich nor so productive in many parts as the southern half of Russia, or the soil of the Argentine Republic, or the great peninsula of India; and therefore, if we are willing to rely on these things mainly, we will have to compete with these lands, with people who have these resources of just as good quality and in just as good condition as our own. And that is why in competing with countries that can grow similar things just as well as we can, we have to take their price for the products and for the labor that is employed in producing them. Take these three other elements and labor and we will get the price of the Indian ryot or the Russian moujik, and they are content with ten cents a day. They can pay their way on that wage, and therefore they vote us and all directly competing laborers down to that wage per day at their class of work; and unless a calamity strikes the earth, as long as they vote that way we will have to take their price in growing wheat. That means a good deal for Ontario. Every man who wants to realize on his resources wants to look out and see whence competition will come and adjust his plans accordingly.

Then take building materials. Up in Manitoba—I am in a quandary about that province and about the Northwest Territories—they are building cheese factories and creameries this winter to the extent of perhaps thirty or forty, an increase of about 200 per cent. Taking the Territories particularly, they have not very much building material, and in some places they have a rather defective water supply. But in Ontario you are able to hold your own against all competitors on this continent or any other continent in regard to soil climate, and water supply and building materials; and this is giving you an advantage over other countries that have not got these.

Then in available labor you are fairly well off here for prosecuting dairy farming with success, because you have a fairly large measure of good labor per hundred acres; and if you had two men more on every hundred acres you would make all these resources worth more. What the province, and the whole Dominion, needs for the increase of its wealth, is not more land under occupation, but the land which is under occupation occupied so that the available labor will find a chance of selling itself through products at a good price. Now the quality of Ontario labor is higher a good deal than the quality of the labor in any of the regions that compete with us in dairy farming excepting three. It is not any better than the quality of labor in Scotland—you might have known that —or in other parts of Great Britain or in Northern Europe or in Australasia. This quality means skilled labor on the part of a people who are cleanly in their personal habits. That is why Russia cannot compete with us in dairy products, or the Italians— the quality of the labor is inferior. Therefore we will get higher prices for our goods and have the advantage there. Then in regard to cost of labor. Labor may be dear by the day, or high in rate by the day and cheap in regard to the cost of the product from it. I would rather pay a man $2 a day who could make me something out of raw material worth $3, than pay a man $1.50 a day who would make something worth $1.25.

In our dairy business we have too many people making butter at the home dairies, and it costs too much. You say, "Well, it doesn't cost the men anything, the women do it." Perhaps so, but it costs the women their time, and it takes fifty times as much time to do the work in fifty home dairies in most cases, as it would cost to do it in a creamery by two men. It doesn't count anything—the time that the women have spent in making butter has been traded off for groceries? I tell you that labor has been the most costly labor that this country has ever seen spent. It has been sold for less money by the hour compared with its true value than any labor ever given to the public. Why? Because the farmer's wife's time, the farmer's boy's mother's time, has been taken up churning five pounds of butter when she should have had leisure to educate that boy to be a productive competent citizen, and he has gone and been a nobody in some town because his mother was too busy making the low-priced butter to give him time in her leisure hours to make him feel that he was to be a whole man, to fill a man's place and do a man's work in the world. That is a very serious matter. It is one of the things that has kept farmers and farming down—keeping the women busy at ill-paid exhausting labor when they should have had leisure to impress noble thoughts on strength and honesty and ambition and unselfishness into their boys and girls.

Now these four elements I have mentioned will affect all products in some measure. Take any primitive product like a load of hay. One load of hay cannot hold any higher quality of labor than another load of hay—at least the difference is inappreciable. The most skilful worker on a farm will get no more by the ton for his hay than the least skilful worker. He may get more tons to the acre, but that is the only way. Now, the quality of labor affects the price of dairy products more than any others; therefore a man who has a high quality of labor to offer will find that dairy products offer him the means with the capacity he needs for marketing his skilled labor at the highest price. You can put more skilled labor into a dollar's worth of butter than into any kind of farm product you can sell for the same price; and everything in it came from the air through plants, leaving the land no poorer. A man can make money even in these times by putting his labor into this form through good cows and a good creamery.

I have only to say this further, that the markets have a good deal to do with—what? The profits? That is what we are all after. Now the quality of the products has a good deal to do with the price we get, and if the product be excellent then the price for that product is higher than for an inferior product in the same market at the same time, so the quality of the labor can elevate the product up to a high price The management of this labor can reduce the cost of the products. Take cheese for instance. It does not seem an impossible thing—it would not be a difficult thing—for any dairyman to make the cows that he keeps give three pounds more milk per day during the cheese factory season; and it does not seem a very difficult task to reduce the cost of feeding those cows through the winter, when they may be dry, to the extent of two cents per head per day. These are both things that can be controlled by almost any man here in regard to the quality of the labor he applies and employs; and these things I have spoken of would so reduce the cost of producing milk that it would be the very same to the man who furnishes milk to a cheese factory as if he got three cents a pound more for his cheese. What is the use of a man moving heaven and earth to find a strong enough word of denunciation to apply to the salesmen of his factory because he did not get the last quarter of a cent that the market afforded? That will raise more ruction among cheese factory members than anything that can happen, and yet by applying skilled labor of the highest order to his part of the business he could ensure himself three cents a pound more profit It would so alter the relation of cost to price that the profits will be increased at the safe end of the business, because profits always lie between the cost of the production and the prices the market will give. I will have something to say about markets after a while; in the meantime I want to show you that the profits depend mainly on the quality of the product and the cost to the man himself of that product. It is always desirable to get the highest price any market can give you, but it is still more desirable to so reduce the cost that you will have some profit in any market, and if the market does go up, you are in the right place to take advantage of it.

Now a word about the value of having co-operative work. I find a good many farmers, especially those who are so situated that they can carry on dairying themselves, sometimes fail to join their neighbors because they say, "Oh, well, we can make as much money ourselves as though we sent our milk to the creamery or cheese factory." But if a man will stand alone in his neighborhood and even make more money for himself at the first, is he quite sure he will make more money in the long run than if he joins his neighbors and helps them to make money in the same way as he is doing? In co-operation in dairying, and in all farm work, we have a capital illustration of the value of men "falling in." If in a campaign where men are at war the call comes down the ranks, "fall in," and one man says "No, I can run faster than this fellow can, and I can shoot better than this other comrade can, I will fall out, get off by myself, and I will do more," what would be the result? Every time a man "falls out," he courts defeat for himself and his fellows, and every time a man "falls in," he insures success. In dairying he almost pledges profit to wait on him. So all over Ontario we have co-operative dairying generally established for that reason.

Now I have not any abatement of my admiration for this Province in regard to its resources, and I have not a bit less faith in the value of dairy farming to enable farmers to realize on these than I had at first. I think I have had a better opportunity of judging than most men who are engaged in the business, and I have more faith than ever I had in its permanent servicability in the province of Ontario. You may say, "Wheat has gone down, therefore won't dairy products go down?" There are a dozen reasons why wheat should go down, but I don't know any reason why dairy products should go down lower than the cost of production.

Then dairying helps to improve the soil. When crops are taken from these resources and sold the soil is so much poorer, but when the crops are fed to cattle then the manure of the cattle goes back on the land and keeps it still fertile for other crops, so that by selling cattle products four-fifths of all that is taken out of the soil in crops goes back to it again.

Then you can realize best on the climate by selling dairy products. What is the use of having a climate if you can't make it serve you in some way? I am not saying it with any irreverence, I am saying it with all candor. That is the object of living in this world. Sunshine from May till September, corn stalks. "Corn stalks in dry weather," you say? Yes, every time. There never was a year when a man could not by fair cultivation, get fifteen tons of corn stalks per acre off decent land in Ontario. Why? Because the atmosphere is not exhausted; and that is where the corn stalk feeds mainly, and it needs simply a supply of water that will enable it to carry a little up from the roots to the top. Last year when the weather was so hot and water so scarce, do you think you could find a farm in this Province on which a man might lay on a bare fallow two good forkfuls of hay, go away for two days and come back and not find the soil moist beneath it? I have seen it fail in the northwest, but never here in Ontario. There is water rising through the soil all the time from the great store of water below, and the two forkfuls of hay keep the water from escaping from the surface. Now, if the corn cultivators are kept running twice a week all summer, it will grow. I have never seen it so dry that corn would not grow if the cultivator is kept going twice a week. So we can insure ourselves against unfavorable conditions of weather by growing this crop. Then we can realize upon the supply of food in the atmosphere through another crop, that is the horse bean, of which I will speak later on. In growing that class of plants, the leguminosæ, that was spoken of in the excellent paper of Mr. Zavitz this morning, the farmer is enabled to glean from the atmosphere the nitrogen, which is the most valuable constituent of plant food. You may say he is a magician if he can go out in the morning, grip the atmosphere in his hand, and bring it in for breakfast. And so he is, and that is what the farmer ought to do. If he cannot find his fingers quite sufficient for that elusive, difficult task, then the good Lord has given him means whereby he can get it without fingers. He can use the toes of the clover and bean plants, and these things will glean for him from the atmosphere the very thing he wants. I made rather an insufficient answer to a remark this morning, and I never like to be misunderstood. When I said that I would grow horse beans on the same piece of land for a great number of years, I was asked if that would not run counter to the common opinion that a rotation of crops is necessary. Now, certain crops feed on constituents in certain conditions. Barley, after peas, would be a good rotation, but if there was only one part of my farm capitally adapted for the bean stalk in gathering the nitrogen for me, I would keep the bean stalk growing there all the time. On our farm at Ottawa there are not more than ten acres of land excellently adapted to the growing of horse beans, therefore I would keep the beans growing on those ten acres to get nitrogen for the farm. That is what I meant by saying rotation was not necessary always. It is desirable in most cases, but if you have a piece of low land don't drain it, put horse beans on it; the water does no harm.

Now about the building materials. We can use these to advantage to make conveniences for saving these plants in the best way. Many farmers make objection to building a silo because the opinion still prevails that ensilage is not a wholesome food for cows. Now, ensilage is simply the best way of preserving plants in a succulent and cured state. There is no gain in drying a plant that is to be fed to an animal if the same plant can be fed in a natural state. Do you suppose anybody would want to eat dried apples if he could get apples in the natural condition at the same time for the same price? I guess he would not. So if you could get grass you would not want to feed hay, and if you can keep corn stalks in their natural condition in a silo, build a silo. That is what it is for. It is not for improving fodder but for preserving it, and one ply of lumber, tongued and grooved, or even with the edges planed, will keep ensilage just as well as four or five or six ply. Good strong studs, hewn on the face, with one thickness of lumber, will make a capital silo, and it is not so apt to decay as two thicknesses of lumber with moisture lying between.

The climate of this country imposes on the people the need of staying off the land for six months in the year, and that is the time the available labor on the farm should be turned to make these products I have been speaking about. It shows that we ought to go into winter dairying in order to have something to do the whole winter—some profitable labor on our farms at our own business, so that we may get interest on the capital invested. I will not try to tell you, because I don't know exactly at the moment, the value of the farm lands of Ontario, with the farm buildings and dairy stock and the creameries and cheese factories, but it is a pretty large sum of money. I will not try to tell you the mortgage indebtedness of the Province and the tremendous amount that is paid for interest. A mortgage, as most of you who happen to have had one know, bears interest for twelve months of the year. I need not have told you that, if you have had any personal experience in these matters. It does not carry interest for only six months in the year by any means; and is it wise to borrow money on land, pay interest for twelve months in the year on it, and leave that capital invested in land yielding us no income for six months of the year? That is what we do when we have lots of cows and buildings bringing no revenue in through the winter. Let us have a revenue all winter from our farms if we can—and we can through winter dairying.

Dairy farming enables a farmer to direct the available labor on his farm so as to keep his servants busy all the time. I know I am not speaking to a company of English farmers who have lots of servants at their disposal, I am speaking to a body of whom I know four-fifths do their own work. Still, I want you to make your servants work as long as you have to work. What is a cow? She is "Bos" in Latin but not in English on a farm. She is supposed to be the servant of man, and I don't quite appreciate the arrangement by which see goes holidaying all winter while the man is looking after her. I would have that servant working, and I would have the man competent to direct that class of labor. It is not easy to make a cow work profitably for twelve months of the year, but it is a task that will make better men for having done it. A cow in using her food does not destroy anything. I never knew a cow capable of destroying anything, but she may waste a great deal. A cow may turn corn stalks into butter, that is turning a less valuable product into a more valuable one. But I have known a cow engage in the rather inglorious task of turning corn stalks into cussedness, on the part of the man and the cow combined. The dry cow eats corn stalks all winter and pays nothing for her board. The man does not feel very kindly towards the cow or towards anything else, and he gets kicked, and then follows what I can express in no other word than the one I have used. A cow should make what she gets as food into a more valuable product. When she does that she is a valuable servant, and when she makes it into a less valuable product she is a poor servant or else she has a poor master.

A. Member: What do you mean by making a cow work all the year round?

Prof. Robertson: Making her give milk for ten months and a half, and then giving her six weeks to finish making her calf. You say "That is easy to say but is it easy to do?" There is not anything I know of in the world to-day that a man gets paid well for that is easy to do. The time when he did is past a good while, and now the man who does the things that are hardest to do gets the biggest pay. A cow will milk for a long season if she is so trained to milk when she is a heifer. On this chart is a representation of a cow's udder. The structure of the udder implies that the cow, should she have a calf, might in the usual course of nature give milk to nourish the calf. We had a heifer in our stable two years ago that was giving several teacupfuls of milk night and morning a year before she had her first calf. The udder of a cow is capable of development by use or something similar to use, and if the udders of the heifers are rubbed systematically for a short time morning and night before they come in first, they will have bigger udders and give you more milk and be capable of milking for a longer season than they otherwise would. It is just developing the milk glands; and if the heifer is managed so as to make her give milk for ten months the first year she will form the habit for next year. That is how you can have the cow working for twelve months in the year. It has been claimed that if a cow is making milk for a long period every year she will grow weak. Instead of that she will grow strong. She will grow strong in the organs of production, and that is what we are after. The men who make these claims say lots of things that they don't know, and that they would not say if they did. What is meant by a good constitution? I will tell you what I mean by it. It is the power to stay in good health, the power to perform the functions of life—in the case of a cow carrying young and giving milk—and the power to render good service. Any animal that does not have these three has a poor constitution. I have known cows that did not work for twelve months in the year,—that rested from their labors from November to March, and that couldn't rise alone in the spring. They had to be "tailed" up, as they say. But I have never seen a cow perform her functions better than one that was being milked ten and a half months in the year, being fed on fairly wholesome food. And then a cow like that will give you a calf with tendencies towards her habits. It means good breeding. Good breeding is not buying pedigreed stock; it is getting an animal to inherit good qualities from its ancestors. If the ancestors have not got them how could it get them from them? I don't know that we have any cows that were specially created for the herd books lately; they can all trace back to the Ark, and if you find a pedigree that shows poor performance on the part of the parent don't raise a calf from that cow. I haven't said much about cattle breeding in public for a while, but I have been thinking a heap down in our cow stable. If you can get an animal that is good to perform, and can trace that back and forward, keep that animal and breed from it. The longer a cow milks every year the better she will pay for her board and the more profit she gives to the man who keeps her.

That brings me to say that the proper management of these things is to have the right thing done at the right time, and that always means profit. And the right thing to have happen now, even in spite of dull markets, is to have butter to sell at even as low a price as 20 cents a pound, because a pound of butter will buy in Canada more things that a farmer wants for his farm to-day than on the average of the last twenty years, even at the low price it is.

Then I want to say a few words on why we feed a cow, and how we should feed a cow in dairy farming to get the best results. We feed a cow certain constitutents because those constitutents are in her products; because, while we are after profits, we can get those profits only as we ultimately serve some man in his body through dairying. I show you this chart to make clear what is the meaning of what is called "Nutritive Ratio."

The human body is composed of albuminoids, fats, carbohydrates, water and mineral matter in the different percentages shown here, and the body of a cow is composed of substances somewhat like the body of a man. If you follow me in the order I have marked, you will see there is 51½ per cent. of water, 16½ per cent. of albuminoids (that is why she needs them in her food, because she is partly composed of them, and needs them to replace those that are worn off) 19 per cent. of fat, no carbohydrates, (because that part of her food is her fuel, and is meant to sustain the body by giving heat and energy) and about 4½ per cent. of mineral matter or ash, which goes to form the bony structure. Now these albuminoids come from certain sources. These partly compose the cow, and partly compose the milk of the cow, and therefore the cheese, butter, skim-milk and whey from the milk.

Chemical Compounds in Human Body of average weight.

——	In 148 lbs.	Percentage.
Water	90.0	60.9
Albuminoids	26.6	17.8
Fats	23.0	15.5
Carbohydrates	.1	.1
Mineral matter	8.3	5.7
	148.0	100.0

Composition of Nutrients in percentages.

——		Nitrogen.	Carbon.	Oxygen.	Hydrogen.
Albuminoids		16 0	53.0	24.0	7.0
Fats		None.	76.5	11.5	12.0
Carbohydrates	Starch	None.	44.4	49.9	5.7
	Sugar	None.	42.0	51.0	7.0

Albuminoids contain all four of these elements, nitrogen, carbon, oxygen and hydrogen. The atmosphere is composed to the extent of 4-5 of nitrogen. If you take five pounds of air, four pounds of it are nitrogen,—so there is lots of it. Carbon also comes from the air ; it is what animals give off in their breath, carbon dioxide. Oxygen and hydrogen are also from the air and water. Take the first letter of oxygen, that is "O," then hydrogen, "H," and these put together, H_2O, make the symbol for water. These four elements enter into the composition of albuminoids. If you multiply the nitrogen by 6¼ you get the albuminoids. That is how a chemist finds out the quantity.

Then we get fats from these three sources, carbon, oxygen and hydrogen ; carbohydrates in cattle feed, corn stalks, sugar, gums, etc., from the same three sources. So if you want to obtain from a cow albuminoids, which are the curd of milk, you might feed her tons and tons of fat and carbohydrates and she could never change them into albuminoids, because there is no nitrogen in carbohydrates. That is why when a man is feeding his cows on Indian corn fodder, composed mainly of corn stalks, and then goes and buys more Indian corn grain to feed those same cows, he is adding more to what they already have too much of.

Mr. MORRISON : So when you feed fodder corn you ought to feed something else along with it ?

Mr. ROBERTSON : Yes. If you would feed products like peas or beans, or bran, or oil cake, which are rich in albuminoids and balance it up so as to give the right proportion of both, you would get better results.

INGREDIENTS OF FOOD MATERIALS.

Albuminoids : White of egg, curd of milk, gluten of wheat, fibrin of muscle, etc.

Fats : Fat of milk, of meat, oil of wheat, of Indian corn, etc.

Carbohydrates : Sugar, starch, woody fibre, etc.

Water,

Mineral matters : Phosphate of lime, salts of potash, sodium, etc.

We mix these in the correct proportions, to get the animals nourished so as to be not merely efficient in performance, but to have in their feed the very things they need to give product or to increase in weight.

There is one thing I would like to make clear. Food performs three functions. The first function might be spoken of as to provide heat to keep the body warm enough for the life of the animal. Then it must supply the proper material to form blood and tissue and to repair waste. I cannot move my arm without the friction rubbing off some little particles that go through the blood and are excreted in some way. To repair that I must take something in my food identical in elements with what I have rubbed off. To supply heat or energy, to repair waste and to provide for increase in weight or product are the functions of food. To get these nutrients in proper proportion should be the object of a good dairymen and a good feeder. I have put on here a few typical foods:

COMPOSITION OF CERTAIN FOOD IN PERCENTAGES.

—	Water.	Albuminoids.	Fat.	Carbohydrates.	Mineral matters.
Oatmeal	7.6	15.1	7.1	68.2	2.
Peas	12.3	26.7	1.7	56.4	2.9
Beans	12.6	23.1	2.	59.2	3.1
Rice	12.4	7.4	.4	79.4	.4
Potatoes	78.9	2.1	.1	17.9	....
Sugar	2.	....	....	97.8	.2
Wheat flour	12.5	11.	1.1	74.9	.5
Milk	87.	3.6	3.7	5.	.7
Wheat bread	32.3	8.8	1.7	56.3	.9
Butter	11.	1.	84.5	.5	3.
Cheese	34.	26.	34.	1.8	4.2
Beef	60.	18.5	20.5	....	1.
Pork fat salted	12.1	3.	80.7	....	4.2
Salmon	63.6	21.6	13.4	....	1.4
Eggs	73.8	14.9	10.5	....	.8

Now, it is purely accidental that oatmeal comes on top of the chart; but in experience it is a case of survival of the fittest. And I want to use another illustration which a remark of my good and eloquent friend, Dr. Jackson, suggested to me. He said a good many of the able men of the world have come from the country schools, but it is not necessarily because they went through country schools. Let me show you the food of the country home and the food of the city home. The food of the country home has a correct nutritive ratio for young people that the city home diet often lacks. On this chart they are in about their right proportions in oatmeal and milk. But who said so—who laid down the law? It was the good Lord laid the law down. We know they are in their right proportions because if they were not, they would have given some result that was not of the best quality. After all, "The proof of the pudding is in the eating," and the proof of the food is in the men it produces. You see the small proportion of albuminoids in rice. Millions of men have been raised largely on rice, and you have the Chinese as they are, not because they had a certain system of civilization and philosophy, but because they lived on a kind of food deficient in the requisites for making robust humanity, and the difference between Scotchmen and Chinese is largely the difference between oatmeal and rice. All over the Province of Ontario we have a breed of cows that have not even a name in our literature—they are a sort of Chinese cows, fed in excess on carbohydrates, and therefore having Chinese natures and habits—lack of persistency in good labor. They have been fed on foods rich in carbohydrates and deficient in albuminoids. Now, can we use any food that is deficient in the albuminoids and get a good product in the people? Potatoes are nearly as poor as rice, but you see the Irishman is a man of ingenuity in resources, and by a stroke of genius he took the fat out of milk, put the remaining milk with the potatoes, and found that he had in buttermilk and potatoes something nearly as good as oatmeal. (Applause). Then beans are not quite wholesome because of an excess of albuminoids and a deficiency of fat. That is where, again, the common sense of the people is shown in the large recognition that is given to the excellence of pork and beans. You cannot find a dish that is typical of the food of a good race but gives the correct nutritive ratio. And if we put the same common sense into the feeding of our cows that we have put into the feeding of ourselves we would have cows as efficient for performance as we ourselves profess to be. This is perhaps an unusual way of showing you the value of "nutritive ratio," but it means that if we don't give the proper propertion of albuminoids, no matter how much you give, you will have inefficient, ineffective, profitless cows.

In the growing of Indian corn, which is often commended as a convenient means of getting a large amount of cattle feed per acre, it is sometimes forgotten that the value of the corn plant is acquired largely in its last days. This chart will show you the comparative values in its various stages, represented by these lines :

INDIAN CORN—YIELDS PER ACRE.

Tasselled.	Green weight	18,045	lb.
	Water	16,426	"
	Dry matter	1,619	"
Silked.	Green weight	25,745	"
	Water	22,676	"
	Dry matter	3,070	"
In milk.	Green weight	32,650	"
	Water	27,957	"
	Dry matter	4,693	"
Glazed.	Green weight	32,295	"
	Water	25,093	"
	Dry matter	7,202	"
Ripe.	Green weight	28,460	"
	Water	20,542	"
	Dry matter	7,918	"

So that if the crop at one stage be worth $16.19 per acre, it is worth $72.02 at the other on the same valuation. Therefore it does not pay to cut the cornstalk short of the glazing stage of growth.

The corn should be at the glazing stage before putting in the silo, for at this stage of ripeness it contains the largest percentage of nutritive qualities. But the corn plant does not furnish all the constituents that cows need for their food.

NUTRIENTS PER ACRE.

—	Albuminoids.	Carbohydrates.	Fats.
	lb.	lb.	lb.
Indian corn, 9,000 lb. dry matter	873	7,371	288
Horse beans, 12 tons	653	1,814	167
Sunflower heads, 7½ tons	352	2,373	729
Hay, mixed, 2 tons	271	2,888	97
Roots, carrots, or mangels 20 tons	480	4,230	68

I have put on this chart the records of the yields of crops from five acres of land to obtain feed for cows in the best proportions and at the lowest possible rates. Taking Indian corn with 9,000 pounds dry matter, about 16 tons to the acre of green corn left to the glazing stage before cutting and slightly dried before it was weighed, it contains 873 pounds of albuminoids, 7,371 pounds of carbohydrates. You see the carbohydrates are out of all proportion to the albuminoids, and therefore the cow in eating cornstalks wastes a large quantity of carbohydrates in order to get enough of albuminoids, so feeding cornstalks alone is not an economical practice. By growing an acre of horse beans (we had nearly 13 tons to the acre last year, and it was not a very favorable season nor very suitable land), we have 653 pounds of albuminoids and 1,814 pounds of carbohydrates; so by putting the corn and beans together we get a better proportion of albuminoids to carbohydrates than we had before. That is why you get a better proportion by feeding oil cake or cotton seed meal or bran with some clover, than by feeding cornstalks alone. Then by growing an acre of sunflowers we have 352 pounds of albuminoids, 2,373 pounds of carbohydrates and 729 pounds of oil. So by putting in a quarter acre of these for every acre of corn we bring up the quantity to its right proportion. I have a box just come from the farm, and I will show you what the ensilage made from these is like. At the present time we have about 350 tons of it and our cattle relish it very highly indeed. Then there is an acre of mixed hay at the rate of two tons per acre, and there are in the two tons 271 pounds albuminoids, 2,888 pounds carbohydrates, and 97 pounds of oil. But though these may contain the necessary constituents they may not give you the best kind of feed for cows, because the feed of a cow must, first of all, be nutritious and then bulky, and then stimulating.

A MEMBER: What stage do you cut the horse beans at?

Prof. ROBERTSON: Just when the pods are well filled, but not ripe.

A MEMBER: Do you feed cows on stimulants?

Prof. ROBERTSON: Certainly, but not on Scotch whiskey, though I don't know anything better in a case of milk fever than a right big dose of it. I use the word stimulant to mean something that will stimulate the cow's organs to healthy activity. Now a cow's organs need to be stimulated into healthy activity by bulky food. If I could put the food of a cow into that one pound box the cow would not thrive on it. The whole interior of a cow is stimulated by bulky food. Then there are the juices of roots such as carrots and mangels. If I could get a fodder cheaper than roots I would put some roots in it for the sake of the bland influence on the cow's digestive organs. Turnips are very bad for flavoring butter, but turnips with straw make a capital feed for dry or fattening cattle.

A MEMBER: Do you not believe that turnips can be fed to dairy cows without tainting the butter?

Prof. ROBERTSON: Yes, but you have to drive the flavor out of the milk or cream afterwards. That peculiar quality which stimulates the cow's organs in the turnips is the same thing that flavors the cow's milk—and flavors the milk in spite of all that a man can possibly do to keep it out. If a man tells me he has fed turnips to his cows and he can't taste the turnip flavor in the milk I think he has a very dull taste.

A MEMBER: Is it not possible to educate a person up to that taste?

Prof. ROBERTSON: Yes, but I wouldn't like to educate the man that was to buy my butter, because I would be dead a long time before he would be ready to pay the highest price for turnip flavored butter without complaining. Turnips are good for cows in helping them to digest straw. 50 lb. of ensilage mixed with 25 lb. of roots, 5 lb. hay and 5 lb. of mixed meal, partly oil cake and bran, will give you a ration of the very best quality which any farmer can use for his cows and at a cost of not more than 12 cents per cow per day. The roots are preferably mangels and carrots for milking cows.

A MEMBER: Would you place a value on the different feeds?

Prof. ROBERTSON: Well, I have put the value at rather more than the actual cost. I value ensilage at $2 a ton, but its actual cost was $1.88. I have put the roots at $2 a ton, but they have only cost us $1.50 a ton for labor and rent of land; I put the hay at $8 per ton and meal at $20 a ton.

A MEMBER: Have you tried peas as a supplementary grain fodder?

Prof. ROBERTSON: Peas make capital feed with fodder corn. Then, taking these products that can be got off five acres at those weights per acre, they have a feeding value equal to 470 bushels of corn or 365 bushels of wheat, or 456 bushels of barley, or 644 bushels of oats, and in a better form that those grains I have mentioned.

Mr. HOBSON: In speaking of the relative value of corn at the different stages, as it becomes near maturity, does not the stalk become correspondingly of less value? My reason for asking is that I feed corn very largely in the way of partial soiling. Still we cannot wait until the corn comes to a given stage, probably a half or a third of that corn is used in the earlier stage. Now in all other plants the straw becomes of less value as the grain comes nearer maturity.

Prof. ROBERTSON: Well, it is sometimes economical to feed corn before it is at its best stage, because even then the corn will give a larger yield per acre than anything else one can grow. Corn when it is at the glazing stage is at its most digestible condition. Sometimes the opposite opinion has been formed, because cows will not eat stalks so readily then unless they have gone in to a silo, but if they have, cows will eat then just as well and it is just as digestible. After that stage the stalk becomes woody and it is rather less digestible.

Now, on the butter question. The cheese trade of Canada is in a fairly satisfactory condition, and I have nothing to suggest in the way of change in regard to that, but in the butter business you can get these very convenient and very cheap packages for pound prints made of heavy paper in the form I have in my hand, so that the butter can be done up conveniently and it will attract customers. These cost lest than half a cent apiece. But what I wanted to say was, that in the process of making butter, to get the very best flavor we must have the cream ripened in a certain way. The ripening is carried on by certain very low forms of life growing in the cream. Now if cream be heated to 153 or 154 degrees most of these things are destroyed, and if cream be heated to that, all the odor of turnips that may be there will be driven off. So by heating cream when it is quite sweet to that temperature you do two things, you drive off even the flavor of onions or leeks in the spring, and you destroy all the forms of life that might give it an undesirable flavor. Bitter cream is caused because some of the tiny forms of life making a bitter product through their own multiplication, have grown in the cream. They grow best at a temperature of 45 to 50 degrees Fahr.; so when cream is kept at about that temperature they grow and it becomes bitter. I am not going to talk on the details of our butter-making, or to discuss the making of it, but we add to the cream what we call a fermentation stopper. Details will be found in the report of the experimental farms. There are two treatments you might call fermentation stoppers; the first is simply to raise the temperature so high that these low forms of life I have spoken of cannot live, and then you have stopped the fermentation; the other is by putting the temperature so low down—to or under freezing point—that the forms of life will not be active. Now these same forms of life go on living in the butter after it is churned, if the temperature be suitable to them, and these are the things that spoil butter. When butter comes "off flavor" it does not take unto itself the notion that "it will taste bad"; but the forms of life that are in the butter go on living and making their products, many of which do give the butter a bad taste. When butter tastes bad you are merely eating the by-products of some form of life that is or was living there. Now if you would always make butter that tastes nice, and then have a fermentation stopper you could keep it like that all the time; and if you have the butter kept anywhere below 30 degrees Fahr. the forms of life that are there will not be active to effect any changes. Creameries have lost lots of money and lots of reputation from nobody being able or willing to store butter at the right temperature. I have been advocating the putting of all butter that is to be held into cold storage; that is, I am advocating the providing of a fermentation stopper to stop the process of decay until the butter comes to the plate of the man who is going to eat it; and if we could have that provided cheap we could have butter at three months old taste as nice as butter three days old, because butter kept at that temperature for three months would not change as much as butter that is kept in the ordinary way three days.

Mr. MORRISON: Do you heat cream to 150° when you separate it; I mean do you do it generally in the creamery?

Prof. ROBERTSON: Not generally in Canada yet.

Mr. MORRISON: Do you do it by hot water or turning the steam pipes into the cream?

Prof. ROBERTSON: By hot water.

Mr. MORRISON: Would it hurt to turn the steam pipes into the cream?

Prof. ROBERTSON: I don't think it would to any appreciable extent. I have seen that done with no bad results. The agriculture of Ontario is in a transition stage. It has already made progress from the primitive agriculture, of which the main requirement was muscular strength and the main economy to rigorously do without things, into a system of diversified farming, requiring keen intellectual management. Dairying, as an occupation, is a business, a trade, and a profession. The present needs of the dairy farmer are a habit of thinking clearly on his own business, a fund of exact information applicable to his condition, persistent energy in skilful labor, and intelligent economy in the management of his affairs. Economy is not another word for meanness. It is quite the opposite, and stands for a wise use of all that one can control of agencies, agents, and opportunities. Ontario is essentially an agricultural province; most of its wealth must come from farming, and through dairying the population will best be able to realize upon its abundant natural resources with the greatest advantage.

In the world-wide competitions which now prevail, it behooves the people and their leaders to consider in what lines of farming they have greatest chance for winning success and profits. Where the primitive plants only are sold, our soil and climate give us little advantage over the equally fertile soil and favorable climate of India, Russia, and parts of the Argentine Republic. Where soil, climate, and building materials only are taken into account, we have advantages over some other countries; and where soil, climate, water supply, building materials, and available labor are all taken in account, we have the advantage of being able to furnish dairy products the whole year around of the very highest quality at as low a cost for production as any people. Where all these resources and our marketing opportunities and facilities are taken into account, as large a measure of profit can be won from dairy farming in Ontario as anywhere.

Dairying in Ontario can be carried on to the greatest advantage by co-operation among farmers. Co-operative dairying helps to reduce the cost of production, and to secure a uniformly fine article of product. It is an application of the law that has grown out of civilization—"to fall in" is a means for winning victories, "to fall out" is the cause of disaster and defeat in nearly all undertakings. In the dairy products there is room for the personal element of superior labor to raise the price of the articles by making them of attractively fine quality. Butter has a larger capacity for holding and becoming a medium for the selling of skilled labor than almost any other product from the farm.

After going thoroughly over the Province for several years I find no abatement of my admiration for its wonderful resources, nor is there any waning of my faith in dairy farming as a means whereby farmers will be able to realize upon its abounding natural resources and turn them into available wealth. Through dairying the farmers are enabled to protect the soil. When crops are grown and fed to dairy cows, four-fifths of the elements of fertility which they take out of the soil goes back to it again in the form of barnyard manure.

Through dairying the farmers are enabled to realize upon the climate, which is admirably adapted for the growing of bulky fodder crops, like Indian corn, horse beans, and sunflowers, for the feeding of cattle. A sample of ensilage from these crops is in the hall. The climate of Canada imposes rest from labor on the land itself for six months of the year; the other six months should be devoted by the farming population to the marketing of the bulky crops grown upon the land in the more concentrated and valuable form of dairy products.

Every farmer should have a silo for the economical storage of Indian corn ensilage. The stables where milking cows are kept should be warm, clean and light, in order that the cattle may be comfortable and healthy, and thus yield a product wholesome and abundant. Winter dairying should be developed in order that profitable employment for all the hands on the farms may be had for 12 months of the year. By this means an income from the capital invested in farm lands, buildings, cattle, and creameries would be obtained. Those cows which are kept in milk for a long period every year acquire enlarged capacity for the yielding of milk, and, instead of being weakened, they are strengthened for the business of their lives, which is the production of the largest possible quantity of milk for the amount of feed consumed by them A good constitution, which may be otherwise expressed as the ability to continue in good health, perform the functions of life, and render good service, is improved, rather than weakened, by a long milking season.

The food for milking cows should be nutritious, bulky, juicy, cheap, palatable, and in variety. An excellent ration may be composed of 50 pounds of ensilage, 25 pounds of roots (mangels or carrots), 5 pounds of hay, and 5 pounds of mixed meal, partly oil cake or bran. On such a ration, reckoning the values of the fodders which compose it at prices above the actual cost of production on the farms, a milking cow may be fed at a cost of about 12 cents per day.

I estimate the quantity of butter manufactured in creameries during the winter of 1894-95 to be more than twice as large as the quantity manufactured during the winter of 1893-94. This business has grown from two winter dairy stations under the management of the Dominion Department of Agriculture in 1891-92, to its present proportions of nearly 100 winter creameries in operation in 1894-95, with an average output of probably 500 pounds of butter per week each.

The quantity manufactured is not yet as much as would be purchased readily by the consumers in Canada if it were not for the unusually dull condition of the butter market. Owing to the speculation on the part of buyers of butter, and to the congested and depressed state of the butter market in Great Britain, the creamery butter made in Canada during the summer of 1894, which should have been exported by the end of November or middle of December, is still held in quantity in Canada.

Some of that butter is now out of fine condition from the want of adequate cold storage accommodation at the creameries, on the railways, and in the warehouses where it was held. It is being pushed on the local markets at comparatively low prices, and the shopkeepers who handle it can pass it off on their customers and obtain an attractively large profit per pound. This is preventing the consumption of fine fresh-made creamery butter by many customers who would willingly pay a higher price for it if they could obtain it.

The British market appears to be the only one in which the growing surplus of our winter-made creamery butter can be disposed of to advantage. At this season of the year usually there is an active demand at good prices for fresh-made butter in the markets there. However, in Great Britain, as in Canada, the butter market is in a congested and depressed state at the present time. The causes which have brought that about are mainly :

1. The increase in the manufacture and sale of oleomargarine, butterine, and imitation butters ; and

2. The putting on the market, or rather the holding over the market in a threatening way, of small quantities of butter from Australia, which have been held in cold storage since the winter of 1893-94. The quantity of the latter has not been great, but it has been used to crush down the market for all imported butters.

The quality of Canadian creamery butter made from December to March is hardly yet known to the British consumers. If it were, in my opinion, it would speedily create a demand for itself at fairly remunerative prices.

Since the price of the winter-made creamery butter in Canada must now come to the basis for export it is unfortunate that the usual agencies and channels of commerce for the shipment of butter are not available to handle fresh-made winter butter in the best way. Nearly all of the merchants who export Canadian butter are, either on their own account or on behalf of their customers, loaded down with, or interested in, quantities of held creamery butter of summer make. It would not be to the advantage of those firms to put fresh-made creamery butter into the hands of their customers and consumers while they still have held butter to dispose of. If the farmers who have gone into the business of winter dairying with a good deal of courage and hopefulness are left to conclude that no outlet at remunerative prices exists, or can be found, for fresh-made winter butter, they will be disheartened, and may withdraw from it before they have given it a fair trial, and have learned from experience that it is capable of becoming one of the most profitable branches of Canadian agriculture. In consequence of these seriously unfavorable conditions which exist at this particular time for the marketing of fresh made creamery butter, I have recommended that provision be made by the Government for the immediate shipment of fresh-made creamery butter to Great Britain. (1) In order to establish a good reputation for the fresh-made winter butter by putting it on the market in the best condition. If this winter-made butter is held in Canada as late as even the end of March, although by reason of the cold weather it may not be deteriorated in quality, it will reach the English market at a time when fresh-made butter from the English dairies will be plentiful. That would probably leave disastrous losses to the shippers, to the manufacturers, or to the farmers. (2) In order to show the farmers that an outlet for all of the creamery butter of fine quality which they can manufacture may be found through the British markets, and that at remunerative prices If this is done for the present season only, the merchants in Canada will doubtless be prepared to handle the winter-made butter for export thereafter. (3) In order to attract the attention of British consumers to the excellent quality of Canadian creamery butter, when supplied to them without deterioration in quality; and (4) in order to take up in an immediately advantageous way the question of putting Canadian creamery butter on the British markets, to be followed up throughout the summer by providing cold storage service and accommodation during transit from the creameries to the warehouses in England. To enable creamery managers to make the payments to their patrons, it has been suggested that an advance of 20 cents per pound be paid by the Government on all creamery butter of fine quality, made between the first of January, 1895, and the first of April, 1895, put up in clean, neat packages, when delivered at Montreal (or other points to be designated), to be shipped to Great Britain; the butter to be delivered at the place or places designated by the Government in regular weekly shipments after the first of February, 1895; and the advance to be made only on butter of finest quality and in fine condition for shipment.

I am hopeful that the Government will make provision for giving effect to this plan for helping the winter butter business. I have been instructed by the Hon. A. R. Angers, Minister of Agriculture, to submit for consideration a plan by which the butter trade of Canada may be put upon as good footing, as to reputation and revenue from it, as has been won by the Canadian cheese industry, which is unrivalled in the extent to which it has promoted the material welfare and prosperity of the farmers of Canada.

When it is fresh-made, Canadian creamery butter compares favorably in quality with the best Danish, Irish creamery, and Australian butters.

So far adequate provision has not been made by the manufacturers or shippers of Canadian butter to enable them to deliver it to the consumers in Great Britain without serious deterioration in quality. The warm temperature in summer, and the long distance from the markets of Great Britain, impose the necessity of special accommodation to preserve a perishable and delicately flavored article like butter from injury while in transit. The quantity of Canadian butter which is sent to Britain is still less than 2 per cent. of the total quantity of butter imported there; and it does not have much influence in determining the general market price for the finest quality of butter in the British markets. The main point to be sought for by Canadian dairymen, through the manufacturers and shippers of butter, is that the Canadian butter be put on the British market in such a condition as to its quality that it will command the highest price which is being paid for any butter at the time when it is offered on the markets there for consumption In the butter market in Great Britain during many years the prices have been lower from April until the end of August than during the period from August until April. The difference in price in favor of the latter period has often been from 2 to 4 cents per pound. For that, and probably other reasons, I dare say 90 per cent. of the creamery butter made during June and July, and destined for Great Britain, has been held in storage in Canada or in Great Britain until after the middle of August. The course which has been pursued in the past has resulted in Canadian creamery butter reaching the British market in a deteriorated condition. Owing to the general advance in the market it may have been sold for as much money at the time when it was marketed in a deteriorated condition as it would have fetched earlier in the season before it had lost its bloom of freshness. That way of marketing has done much to prevent our creamery butter from winning a reputation for excellence which it deserves when it leaves the hands of the butter-makers, and before the process of decay has made progress in spoiling the flavor. It is not likely that the merchants who buy and speculate in butter will accept any advice from an independent authority as to when to buy, when to sell, how long to store, or when to ship. Creamery butter, if put into a suitable cold-storage room before it is three days old and kept at a temperature not above 30 degrees Fahr., will not be injured in quality as much in three months under these conditions as it would be in a week in the ordinary temperature of an English warehouse in June, July or August. We need cold-storage accommodation for the creamery butter of Canada, at a temperature not above 30 degrees Fahr. from the time when it is put into packages at the creameries until it is delivered to the retail shops of Great Britain. It seems to me desirable that steps be taken to provide cold-storage service on the main lines of railway in Ontario and Quebec, by a refrigerator butter-car service to Montreal, and any other point which may be designated, at least once every week; and that cold-storage accommodation be provided in Montreal, and at any other point which may be designated for the storage of creamery butter when received there in regular weekly shipments. From the time when it is received until the end of August it should be stored at a charge low enough to attract all the creamery butter which is to be held until August into it. The temperature of the cold storage room in Montreal should be maintained not above 20 degrees Fahr. Refrigerator accommodation should be provided on steamships so as to afford cold-storage accommodation from the port of Montreal to Liverpool, or London, or Bristol, once every fortnight. The temperature in the cold-storage rooms on board the steamers should not be higher than 30 degrees Fahr. That could be maintained by either the mechanical and ammonia process and the circulation of brine, or by the use of ice and salt.

Cold storage accommodation should be provided in Liverpool, or London, or Bristol, or all three places, into which the butter could be put directly from the steamships. Provision should be made to permit it to be held thereafter at a temperature not exceeding 30 degrees Fahr., at a nominal charge for the first two weeks, and a progressively higher charge thereafter. To provide cold storage on the railways and steamships only, without the accommodation at Montreal and Liverpool, or London, or Bristol, would not in my opinion, meet the needs of the case, nor prove of permanent advantage to the butter-making industry. I am of opinion that such accommodation as is herein recommended would give to Canadian creamery butter in Great Britain a market value at least two cents per pound higher than it would have in the same market at the same time without the continuous cold storage. It would be a means whereby Canadian creamery butter would gain the reputation which its quality deserves when it is not injured in transit or in being held in unsuitable storehouses.

It would open up the channels through which the farmers, the manufacturers, the butter merchants and the carrying companies would continue and develop to large proportions a trade likely to be permanently profitable without any direct cost to the Government after the first or second year.

It appears to me reasonable that the creamery industry of Canada, which is capable of adding so much to the wealth of the country, should receive help in these directions from the Government at the present time. I am all the more hopeful of this, because such action will be consistently in keeping with the whole policy of the Department of Agriculture in promoting a development of the dairy interests of Canada by those means and along those lines which least interfere with the enterprise of commerce and best aid in a speedy development of this national industry, which gives employment at remunerative rates to a large number of people, and which brings a steady revenue in cash from outside markets.

Thus dairying in Ontario may become more and more a means whereby the farming methods of the Province will be improved towards enriching the soil and leaving it more productive than it has been during the past ten years.

The improved methods of farming cannot but have a controlling influence on the intellectual life of the rural population, on the commercial life of the whole people, and on the moral attitude of every citizen, in so far as it makes it easier to earn a good living, win leisure for the culture of those graces and talents which have made the lives of the well-to-do country people in all lands contented and contentedly useful in the most excellent way of serving their country, through vigorous, productive labor and unselfish lives.

A MEMBER: Have you tested wheat in regard to making butter by feeding it to cows?

Prof. ROBERTSON: We have fed wheat and it is a capital food, but not so good as peas with corn.

A MEMBER: Did you notice any peculiarity as to how it affected the butter, whether it made it very hard to work, very waxy? I have been feeding it to my cows, and I found it had that effect, so I stopped it altogether and began feeding pea meal, and I found a difference in the working of the butter—a different grain altogether.

Prof. ROBERTSON: I did not observe anything like that; I don't see how it could have an effect like that.

Mr. HONEY: I would like to know what you consider the difference in the feeding value of a ton of good Swede turnips and a ton of ensilage? Then I would like to know more about increasing the milking capacity of the cow by rubbing her udder when she is a heifer.

Prof. ROBERTSON.—Corn ensilage and roots are not properly comparable with each other, because the one cannot take the place of the other. One supplements the other, so I could not give you any statement that so many tons of roots are equal to so many tons of ensilage. But if one has nothing but dry fodder and meal to feed, I think that one ton of ensilage is worth a little more than two tons of turnips, because one ton of corn ensilage will contain nearly three times as much dry matter Then, about developing the milking glands of a heifer: if you simply rub backwards and forwards, the irritation will make a larger flow of blood there and stimulate the nerves. We do it also for this reason, that the heifer is so much quieter when she comes in, and will give you more milk the first two weeks, and keep it up afterwards. It means a good deal of increase of profit in the handling of the cow.

Mr. BEAM: With regard to round silos with one single plank, have you had any experience in building such?

Prof. ROBERTSON: I have seen many silos made by planks on end with iron hoops, but after they are worn a few years I don't think they are quite as satisfactory as a silo that is built in solid form.

A MEMBER: Have you had any experience with concrete silos?

Prof. ROBERTSON: We have one that is cement on a stone wall, but it does not preserve the ensilage so well as the wooden lining. No stone or brick or concrete will keep ensilage so well as a wooden lining.

A MEMBER: A remark was made a short time ago that beans will grow in three or four inches of water. Now, my experience has been completely at variance with that. I have found in wet seasons that the parts of the field where the water could not possibly stand yielded a very good crop, while where the water did stand I had no beans at all.

Prof. ROBERTSON: Well, I suppose there was a little extravagance of statement in the illustration, but two years ago we had our horse bean crop in a low part of the farm on which the water did stand for over six weeks three or four inches deep sometimes, with perhaps a little dry spell for one day in the week and then rain again, and I found that horse beans always do well on a very wet piece of ground, though of course they must have some air. The Scotch farmers who have grown horse beans for a long time say it is the only crop that is not improved by draining the land. I am speaking of horse beans; the other beans are different altogether. The white bean requires light, sandy land.

A MEMBER: Where can these horse beans be purchased?

Prof. ROBERTSON: From nearly all the seedsmen in Toronto and Montreal. They cost about $2 a bushel.

TEACHING AGRICULTURE IN THE SCHOOLS.

Moved by A. W. PEART, seconded by T. G. RAYNOR, "That this Institute recognizes the prime necessity of teaching the elementary sciences that subserve agriculture in the rural and high schools of Ontario, and that the Ontario Government be memorialized to introduce the necessary legislation to make such studies compulsory in all classes of schools from the primary to the normal, viz., public, high, model and normal schools." Referred to the Committee on Resolutions.

REPORT OF COMMITTEE ON NEW BUSINESS.

Mr. RAYNOR, chairman of the committee, then presented the following report of the Committee on New Business:

Your Committee on New Business beg leave to submit the following report:

1. Your committee recommend that the resolution amending the constitution by limiting the number of delegates from local institutes to one be brought before this meeting for their consideration.

2. That the resolution regarding the disbanding of this Institute at the close of this session be not entertained.

3. That the resolution pertaining to the reduction of the salaries of all Government officials—that they be reduced in conformity with the times—be laid before this Institute for their approval.

4. With regard to the resolution of the North Renfrew Farmers' Institute, we do not pass an opinion on it as it appears to be purely a local matter.

Moved by Mr. RAYNOR, seconded by Mr. GOOD, that the report be adopted.

Moved in amendment by Mr. LICK, seconded by Mr. HONEY, that the report be received, but that none of the subjects included in the report be discussed by this meeting until the order paper has been exhausted.

The amendment was carried.

It being 6 o'clock the meeting adjourned.

SECOND DAY—EVENING SESSION.

The meeting was called to order at 7.30 p.m.

Owing to the illness of Mr. McEwing, Mr. T. G. Raynor occupied the chair.

CLOVERS.

Mr. D. McRAE, of Guelph, read the following paper:

RED CLOVER—(*Trifolium Pratense.*)

Red clover is the best known and most commonly and widely cultivated of all the clovers. It is a grand plant from whatever point we view it—valuable for soiling, good pasture, excellent for hay; growing again quickly after cutting, it gives a good aftermath. When plowed under it makes a valuable manure. Red clover easily takes the first place among the clovers as wheat does amongst our grains. Its cultivation has enriched many worn out soils, and has led to an increased production of live stock, to better farming and better profits to the farmer. Much good has been done with it in the past and much more can be done in the future if carefully and cautiously managed. It benefits the land, the stock, the farmer, and the country, and, if grown at all, it always benefits one or other of these, generally all of them. Red clover is a native of Europe, where it grows wild in nearly all parts of the country. It is also found in Asia and Africa. It has been introduced and grown in many parts of America. It was not much cultivated in Europe till modern times. Since the beginning of the 18th century its culture has spread largely and it has done much for the advancement of British agriculture. It has become very well known in America, and is sown largely with timothy as our principal hay crop. As a general rule it will do well wherever winter wheat succeeds.

As to soil. Red clover will grow in a variety of soils, but usually does better on heavy lands than on light. Wet, stiff clays should be drained, and well worked before putting them under clover. The roots go deep down into the subsoil, and do not do well when stagnant water is present. Clovers do best on limestone soils, either on limestone foundations or on soils mixed with lime or marl. Really good results cannot be expected unless there be more or less lime in the soil. Each ton of clover hay contains about 40 pounds of lime and 12 pounds magnesia. This is one reason why clovers do so well on the soils overlying our magnesia limestones so common in Western Ontario. Clovers will not do well if the subsoil be ochreous, or if it contain much iron, or be thin, rocky, or have an underlying hard pan which the roots cannot penetrate. Irrigated land is not suitable for red clover though well adapted for lucerne. Loamy sandy soils, if moderately moist and rich in humus, are very suitable. Dry sandy soils, moorland, or wet marsh, are not suitable for red clover.

Seed and Sowing. Red clover is usually sown in a grass, or timothy mixture and with a grain crop. By the time the grain is cut, the clover and grass plants should be well established. This is not always the case, as in our climate the dry scorching heat of summer often kills out the young clover plants, and when the grain crop is harvested the catch is too poor to keep. This is discouraging to every clover grower and is a common experience. The nurse crop has drawn away the moisture and left the clover to die from drouth. Clover does best sown in the early spring on winter wheat or rye. It may be sown on the last snow fall, when the melting snow will carry it into the soil. If that be missed it may be put on the frozen ground, in the honeycomb stage. If the clover gets an early start and thrives well, especially if it receives the moisture it loves, in April, May and June, by the time the dry days come it is well and deeply rooted and can stand a good deal of heat and drouth. The winter grain crop is by this time well forward and not needing as much moisture as a spring crop. Of the spring grains with which clover is sown, barley is the best and oats the worst. In England clover is often sown with rape, the rape fed to sheep, the manure helping on the young clover. Or it may be sown alone and this often succeeds. It should be got in very early if this plan be adopted, before the spring rains, as much moisture is needed for the germination of the seed and the early growth of the plant. If sown late, and dry days follow, much of the seed may be lost, only partly sprouted. For a pure sowing of red clover about a peck may be used. If the land be good, rich and well worked, less will do. On poor land, badly handled, more seed is needed. For mixtures from 4 to 8 pounds is a usual quantity. One pound of seed contains about 279,000 grains. The bushel weighs 60 pounds, but good seed will go over weight. With spring crops, clover and grasses, seeds are generally sown from the grass seeder with the drill. Clover will do more deeply covered than grass seed, and where drouth is feared part may be sown from the grass seeder and part mixed with the grain and drilled in. Some of this will be lost by being too deeply buried, but what does come will be deeply rooted and better able to stand a dry summer. The best farmers are now seeding with clover all wheat crops grown on the farm. They find it a good manure, increasing the fertility of the land year by year. This is done even when the field has to be plowed in the fall, the increased fertility more than paying for the cost of the seed. Those who have followed this plan the longest are loudest in its praises. Clover improves on close acquaintance, and the more it is known and used the better it is liked. Clovers are now a necessity. Using the free nitrogen of the air by means of bacteria in nodules on the roots they do not need this most expensive manure, but actually supply it to future crops. If with the clover seed there be sown the spores of these bacteria which may be found in old clover soils it is claimed that the crop can be largely increased.

The young clover plant should not be closely eaten down in the fall. If the growth be rank, calves or lambs may be put upon it, but the latter only in exceptional circumstances as sheep nip the plants too close. If there are exposed knolls in the field a little rough straw or coarse manure will give good winter protection, tending to hold the snow and protect the plant. As the winter approaches, the clover root contracts and draws the top closely down to the ground. In the spring land plaster is sometimes used and may give good results. If the soil be rich, the gypsum acts by releasing plant food from an insoluble state and making it available for the growing plants. To do this there must be moisture in considerable quantities. The result, if dry weather follows its application, are not so well discernible. The clover should be cut when in full bloom. A large yield by weight will be obtained at the end of the flowering period, but there will not be so much digestible material as when the plant is in full bloom.

Haymaking. The mower may be started any time after the dew is off, the weather being favorable and enough cut for an afternoon's hauling. The tedder may then be started and worked till early evening. As soon as the dew is off the following morning it may be again used, the hay rake started and the clover drawn in the same afternoon. This is the plan now adopted by many of the best clover growers. It should be carefully packed in the mow and well tramped without the addition of any salt or other substance, and, when put in without either dew or rain upon it, will come out in good condition and be relished by all stock. If seed be grown the second crop is taken, and if it be intended to be kept for seed the first crop should always be cut earlier than otherwise. After a seed crop is cut, many of the plants die the following winter, and the after result usually does not warrant the keeping of the field longer in clover. The roots left after hay is cut are estimated at about half the yield of hay and are of very great value as manure. When the clover crop itself is to be manured the best time to apply the manure is on the stubble. Wood ashes are good and any manure rich in potash or phosphoric acid, the substances usually most needed by the clover. Ordinary barnyard manure gives better results used elsewhere, not being specially needed by the clover plant.

ALSIKE CLOVER—(*Trifolium Hybridum.*)

This clover gets its name from a village in Sweden, near Upsula. It has also been called Swedish clover. Its specific botanical name was given by Lieansaus because he considered it a cross between the red and the white species. It differs from red in being later, taller, more tender and juicy. The flower heads are on long stems and are intermediate in size and color between those of white and red clover. Its flowers resemble in shape those of white clover, and are longer and of a rosy or pinkish tint. It has a sweet smell. It is a native of Europe, where it has been cultivated extensively in recent years, and where there is a good market for our simpler seed. It only reached England in 1834, and Germany in 1854, where it is now grown for forage. In its wild state alsike is met with in damp meadows, on the banks of streams, and on damp uncultivated land It grows best on moist loams or clays. It will thrive on clay land too. Other clover soils of a sandy nature, light and dry, are not so suitable for it, but it will grow even on poor sandy soil if these have lime and potash. Alsike has a superficial root system, and draws most of its nourishment from the top soil. It can be grown on irrigated land, but does not do well with stagnant water. It is not liable to be uprooted in winter, and can stand a great deal of cold, but does not do well with long continued dry weather; and while a time of drouth may not kill out all the plants the produce is much reduced. In spring it is much later than red clover, and comes into flower in July, ripening its seed about the time fall wheat is ready for harvest. When cut for hay the greatest nutritive value is when the plant is in full flower. The growth of alsike is different from that of red clover. Some of the stems lie along the ground without rooting and then shoots upward. When the crop is heavy and the bottom damp, it is liable to lodge and rot. It is a much more leafy plant than red clover, the leaves are the most valuable part of the plant, and great care is needed not to lose them in haymaking. After cutting there is almost no growth till after the fall rains, and even then the yield is very light. It is more permanent than red clover and can be used for from three to five years. Mixed with other plants it will live even longer. It flourishes in the same deep moist soil that suits timothy, and makes an excellent companion for that grass. They mature about the same time. The stalk is not so thick and woody as red clover, it does not turn black by exposure and the mixture makes the best of forage. Alsike is a valuable pasture grass and one of the best clovers for alternate husbandry. Alsike yields a very profitable seed crop and is now much cultivated for that purpose in some parts of Ontario. The seed must be taken from the first crop, as the second does not reach maturity. For seed purposes, soils should be selected which are of a dry type. Damp land is not suitable for a seed crop; the clover on these may grow too tall and is apt to be lodged and lost. If the crop is likely to be very heavy it had better be pastured for a short time in the spring. After cutting, the crops should be very carefully handled, as the seed is easily shelled out and lost. Before threshing time must be given to allow the seeds to become thoroughly dry. This prevents them being crushed during threshing. From six to eight pounds of seed are usually sown per acre, but this varies according to conditions.

WHITE CLOVER—(*Trifolium Repens*).

This clover grows abundantly in many parts of Ontario and is seldom sown, but whether it is natural or has been imported it is hard to say. It is largely grown in Holland and is often called Dutch clover. The seed will lie dormant for a long time in the spring, and at a considerable depth, and be ready to grow when brought to the surface. The plant has a creeping habit; the stem is solid. As it runs along the ground it sends out roots from the joints. It has both a tap root and fibrous surface roots; can stand a good deal of drouth, when the tap roots supply the moisture for the subsoil. It will grow on many different soils, but does best on a moist soil with lime and humus. It does not yield like red clover, but will grow on soils of inferior quality not suitable for the larger varieties. It is found in most permanent pastures, is very common and widely known. As pasture it is excellent, is readily eaten and relished by all kinds of stock. Its nutritive value is high. Lobbes states that in Holland five acres of white clover pasture will keep seven milk cows. When cattle are pastured on white clover a considerable number of heads are left and run to seed. White clover produces an abundant crop of seed much easier to harvest than red clover. Seed of good quality should have a bright sulphur yellow color. Old seed becomes reddish and loses much of its germinating power. From seven to ten pounds of seed are required for a pure sowing per acre. It quickly shows the result of top-dressing with manure and no plant is more easily cultivated.

ZIG-ZAG CLOVER—(*Trifolium Medium.*)

This plant has not been much in the market, and seed is not usually kept by dealers. It is of a decidedly perennial character. There is a marked difference between this and red clover. The stems of red clover are nearly straight, the leaflets broad and often notched at the end, and marked with a pale spot on the upper side. The other has its stems zig-zig, and its leaflets narrow, long, entire and spotless. The flowers are of a deeper purple, and larger than the red, and the whole plant more slender. The medium is a dry clover, white growing and is more easily made into hay. The roots of the medium are creeping, those of the red spindle-shaped. The plant in England is generally found by roadsides, or in rough grassy places in dry situations. It appears to be able to stand any degree of cold or heat.

MAMMOTH RED—(*Trifolium Perenne.*)

Called also Grant clover or cow grass. It is a true perennial with fibrous roots, which under suitable conditions live many years. It is of ranker growth than the red, and is later in flowering. It gives an immense growth, rich loamy soils sometimes giving twice as much as the common red. It ripens with timothy and is suitable for a mixture with it. It does not flower till at least ten days after red clover. When grown alone it makes an excellent soiling crop. Stalks generally solid instead of hollow.

YELLOW TREFOIL—(*Medicago Lupulina.*)

This is a fibrous biennial plant flowering from May till September. The flower is small and yellow and the seeds large and black, hence it is sometimes called Black Medick. Trefoil starts very easily, and gives a bite before any other clover in the spring. It only lives two years, but it seeds so much as to be practically permanent. It is nutritious and relished by stock. It lies along the ground, is not easily cut, but is a good grass for pastures. It is not many years since it was brought to Ontario, and now in many places it may be seen growing like a weed by the roadside. It stands cold much better than heat; it will grow on almost any soil. It needs lime, and does best on rich limestone soils, but even on sands it will do well. Sheep like it, and injure it less than red clover. Cattle relish it and it is supposed to give a rich color and good flavor to butter. If sown in the early spring it yields well the same year. In the second year it usually dies after first cutting. It is not suitable for sowing alone, but a small quantity may be put in with other clovers in mixture for pasture.

The tap root produces few branches and descends vertically for about a foot. The stem branches spring from the corner of the root and extend horizontally for some distance before bending upwards.

LUCERNE ALFALFA—(*Medicago Sativa.*)

This is the oldest of all the clovers. It is a very ancient agricultural plant, and was well known to the Greeks and Romans. It is said to have been imported from Media during the war with the Persians about B. C. 470. It is largely grown in Italy and in Spain, and all through southern Europe, and on this continent in the west and southwest of the United States, and largely in California. Lucerne is the most important fodder plant in southern Europe. It does well and is very productive in warm climates and on dry soils where red clover would be dried up. When used for soiling, three to five crops can be cut during the summer. It lives from three to twenty years. Its roots go deep into the soil. After long drouth it withers, but when rain comes springs quickly again. It does not do well with continued wet weather. It can stand considerable cold. It does well in Ontario—does best where rainfall is limited under thirty inches. The great essential for lucerne is a good subsoil, not too stiff. The roots penetrate in all directions in the subsoil, and the surface soil is not important. A large quantity of lime is needed; with stiff subsoil on hardpan the plant cannot grow. The Swiss naturalist Bonnett mentions a plant on the Avne with a tap root 66 feet long. It will grow if it can get down, to 25 or 30 inches; less than that it does not do well. Do not put fresh manure on land to sow with lucerne. The weed growth if too much stimulated; after a well cleaned root crop is better. The stems are one to three feet, branching with abundant leaves. There is a light crop the first year. Always cut before flowering. It is best as green fodder; not so good for hay as the leaves fall off. Drying is difficult. The roots are strong when plowed up. Sheep are hard on the plants at a dry time, nipping off the buds and young shoots. It is not profitable to grow seed here. Yellow seed is the best. There are 60 pounds, or from 182,000 to 237,000 grains to the bushel. I have found it by experience a good plant as a mixture in moderate quantities both in hay and pasture. It keeps green and gives a bite when other plants are dry and withered. When old it becomes hard and is not so suitable for stock feed.

Moved by Mr. MURRAY PETTIT, seconded by Mr. CLARKSON, that the name of A. W. Peart be substituted for that of Murray Pettit on the Committee on the President's Address. Carried.

MEAT PRODUCTION.

Mr. John McMillan, M.P., read the following paper: On rising to read a paper on the production of meat I feel at a loss where to begin on account of the magnitude and importance of the question.

Beef.

If our interests in the production of meats were confined to Canada alone, it would be much easier to treat of this question; but when we consider that our success and the prices we derive from this branch of industry depend to a large extent upon the competition we meet in putting our surplus upon the markets of the world, it makes a much more difficult task. In view of the continuation of the restrictions on our cattle in Great Britain, and the recent action of the German and Belgian governments, some of our cattle men are making inquiry in France, where several thousand head are said to have been imported last year for the Paris market, and that if nothing occurs to interfere with the trade the market may be indefinitely increased in fat cattle. Then we may expect more competition in live cattle in the British market than in times past, as it is reported that Australian shippers are looking for freight for 1,000 head of cattle to be shipped early next spring. Parties have also sent a large vessel to the River Platte to bring over a cargo of live animals as a trial shipment. I heard one of the Intercolonial Commissioners from the Australian colonies, who visited Ottawa last winter, state that in the colony that he represented thousands of bullocks for the British market, weighing about 1,400 lb. live weight, could be bought for two pounds ten shillings sterling per head. We know that a shipment of fat cattle from Australia was made last year, when it was stated that each bullock cost four pound ten shillings sterling put on board, and it is said they realized fourteen or fifteen pounds per head, and that it cost from thirteen to fourteen pounds exclusive of fifteen shillings London charges to put them on the market according to present conditions.

In 1890 Great Britain imported 642,596 cattle, and in 1892 only 502,237, a falling off in two years of 140,368. But in 1889 Great Britain imported of fresh beef, 155,204,234 lb., and in 1892 it was increased to 232,919,344 lb., an increase of 77,715,110 lb. of fresh beef from 1889 to 1892.

One feature of the cattle trade for the last two years is that the Chicago and Buffalo markets have ruled higher than the Toronto and Montreal markets, from 50 cents to $1 per hundred pounds. Let us have reciprocity with the United States.

What are the capabilities of different countries, and what quantities of stock have they got? The following figures tell the story:

In 1890 Britain had	10,789,858	cattle,	31,667,195	sheep,	4,362,040	pigs.
" Australia "	10,979,819	"	114,127,407	"	1,172,520	"
" Canada "	4,060,662	"	2,573,997	"		
" Ontario "	1,894,712	"	1,339,695	"	1,140,559	"
1893 Ontario "	2,057,882	"	1,935,938	"	1,012,022	"
1890 United States had	52,875,239	"	43,431,136	"	50,625,106	"
1885 " "	45,510,636	"	48,322,331	"	46,092,043	"
1891 North America had	57,887,438	"	51,292,797	"		
" South "	57,610,183	"	96,242,137	"	2,723,516	"

The above figures give some idea of the possible exporting countries in the world. The reason I gave North and South America is that I could find no statement of the numbers of animals in the different countries of South America, and I thought a statement of the numbers of North and South America would give some idea of what we may expect in the way of competition through the River Platte from the Argentine Republic, as they are experimenting at present in shipping live cattle to Great Britain.

I think the farmers of Ontario have nothing to fear in the shape of competition from cattle from the ranches of our own North-West, and I believe the United States will not increase their herds of cattle in any greater ratio than the increase in their home consumption. In the number of sheep the United States is reduced from 1885, when she had 48,322,331 to 43,431,136 in 1890, a falling off of nearly 5,000,000 in five years.

In breeding cattle for the production of beef one of the first conditions is to have good comfortable stables, sufficiently warm to prevent the manure from freezing in the coldest weather; to have a plentiful supply of good water inside, so that the animals can get plenty all the time; and to have the stables well ventilated, so that there is a supply of pure fresh air.

Then the animals to breed from must belong to some of the beefing breeds, as the Durham, the Hereford, the Devon, the Polled Angus, or the Galloway. They must also belong to a family that, through a long course of proper care in both breeding and feeding, has acquired the habit of maturing early and laying on beef rapidly. Such animals, with proper care from the time the calf is dropped until ready to slaughter, can easily be made to weigh on an average 1,400 lb. at from two years to two years and six months old. Never use any male except a pure bred animal with a good pedigree, which can be traced back for a number of generations to some noted family of beef producers. Have the calves dropped from the end of January until the beginning of April. I do not let the calf suck, but feed from the pail. Feed full milk for three or four weeks, changing gradually from full to skim milk. We boil flaxseed and mix with the milk, always warming skim milk up to the temperature of the milk as it comes from the cow. We give a little meal—a mixture of two bushels of oats to one bushel of peas ground. We have a box in the pen which the calf can reach to get meal. There is no danger from scouring in my experience in feeding dry meal. Then a little barley meal and a little flaxseed ground may be fed. Keep the young animal growing and fairly fat all the time. This is the time that the habit of rapid growth and the laying on of fat can be formed in the young animal. Give a little clover hay and a few cut roots and teach the young animal to feed when the milk is taken off, which should be done gradually by mixing the milk with water to make it the proper heat. If the calves are in a roomy box in the stable they may be kept there the most of the summer, or in a field where there is shelter. Don't stop feeding and turn into a field with other cattle where there is no shelter. If turned out in hot weather put them inside in the heat of the day. Give them green feed as soon as it can be got, clover or young timothy; then in the fall green corn run through the straw-cutter with a little meal. If they have been turned out, put them in the stables at night as soon as cold wet weather sets in in the fall. Feed in winter ensilage with cut hay and straw, with meal—a mixture of oats, peas and barley. Keep them growing and in a loose box if possible. I think they do better loose than tied. When let out to pasture in the spring it should not be too early, and only a short time during the day at first. All changes in food should be gradual, not rapid, if possible. Do not have pastures too barely eaten in the fall. When there is a nice cover of old grass on a field in the winter the young grass comes much earlier in the spring, and when the cattle are put out they get a portion of the old dry grass with the new grass, which prevents scouring. Let the cattle have access to salt all the time; it is better than salting at intervals. Then in the fall be ready to put in the stable as soon as cold wet nights come on. Prepare some crop to soil with in the event of such a summer as we had last season—oats and peas sown at different times; and for fall feed, Indian corn. When we put our cattle into the stables in the fall we take off the horns. I think the best time is when they are first put in the stable, as cattle generally stand still without gaining when first put in, and if dehorned at any other time there will be two periods instead of one that the cattle will not gain.

We also bought a lot of cattle every fall for a number of years past. This requires one to be a good judge in order to buy none but animals that will do well, and only to buy animals in good condition, as it never pays to buy either rough or lean animals to feed. Never buy an animal to feed that is not in good condition when it comes off the grass in the fall, as one that does not get fat on grass will not fatten easily in the stall.

To make breeding and feeding profitable it must be done when the animal is young, for then the digestive and assimilative functions are most active. Another important point is, that while the animal is young and growing rapidly the percentage of waste in the system is much less than at or after maturity. The food of support, or what is necessary to supply the constant waste of the system and keep the animal without loss, is a large item at maturity. It then becomes very clear that the interest of the feeder requires that the shortest possible time should be given to the growth of the animal intended for the production of meat. It is said that skilful breeding and feeding with the same amount of food will produce two animals at from two years to two years and four months old as it will require under the old system to produce one animal at four years old.

Here is a statement by Mr. Groffs of the cost of producing beef at one, two and three years old :

2 steers 12 months old, weighing 1,000 lb. each, cost..	$34.67 =	3.47	cts. per lb.
2nd year they gained 600 lb. at a cost of............	52.13 =	8.68	"
3rd " 650 lb "	81.50 =	12.54	"

Never feed scrubs or buy them to feed. Mr. Britton, a feeder, of Toronto, tried an experiment with 100 scrubs and 100 well bred Durham grades fed in the same stables at the same time. He said the scrubs ate the most feed and only gained 130 lb. each, while the grades gained 270 lb. each ; thus a grade put on fully two pounds live weight on the same feed that it took to put one pound on a scrub.

Then kindness to the animals and regularity in feeding and in all the operations in the stables are necessary. Feed no more than they will eat up clean within one and one-half hours from the time of being fed. We are keeping our cattle for the third year in loose boxes fitted up with troughs to feed them in. We feed ensilage, cut hay and cut straw mixed, and we believe the cattle do better in loose boxes than when tied up, and it saves a great amount of labor.

In keeping cattle a great amount of feed is lost in turning cattle out to water either at a trough that is all covered over with ice before the water is pumped into it, or to drink out of a hole chopped through the ice into ice cold water.

We have 113 head of steers in our stables this winter, all dehorned, and about 80 of them in loose boxes. We are running them over to finish on the grass. They are fed three times a day. In the morning they get what straw they will eat, say 7 lb. ; at noon, silage, 7 lb., cut straw, 5 lb., meal (a mixture of bran, barley and oats) $1\frac{1}{2}$ lb. ; at night, 7 lb. of silage, 5 lb. cut straw, meal $\frac{3}{4}$ of a lb. ; that is straw 17 lb., silage 14 lb., meal $2\frac{1}{4}$ lb., or $33\frac{1}{4}$ lb., costing $5\frac{5}{8}$ cents—counting straw at $3 per ton, silage what it cost to raise—$1.60 per ton, and 80 cents per 100 lb. for meal.

Let the same individual feed the cattle all the time, and at regular intervals. We go into the stables in the morning at 6 o'clock. Quietness and kindness must be exercised in all cases. Even if an animal kicks, you must not kick or strike in return. If anything is to be done get a curry comb or card and card the animal, and you will soon make it quiet in this way. A great deal depends upon a quiet, kind herdsman, as it is said that every little irritation in an animal is a loss of three days' feed, and a first-class caretaker is equal to one-seventh of the increase in the animal. All loud talking and excitement must be avoided in order to get the best results.

Then when the animals are ready for the market and sold, do not drive them out, if for shipment, in the heat of the day in hot weather, even if sold by weight and to be weighed when they arrive at the railway station. Drive them out in the cool of the morning and let them stand for a few hours. Great injury is done to cattle by being over-driven and heated up before they are shipped.

Last year we fed cattle for the May market. They were fed as follows per day :

18	lb. ensilage	$1\frac{3}{4}$	cents.
9	" straw, $3 per ton...............	$1\frac{3}{4}$	"
6	" hay, $6 per ton	$1\frac{4}{5}$	"
8	" meal, $\frac{5}{6}$ cents lb...............	$6\frac{2}{3}$	"

or 12 cents per head per day for the whole feeding period.

MUTTON.

In the importation and consumption of sheep and mutton great changes have taken place in Great Britain within the last ten years. In the year 1886 there were imported into Britain 1,038,965 live sheep. In 1890 only 62,682 sheep were imported. Canada sent of live sheep to Britain in

1889	59,344
1890	43,372
1891	32,042
1892	15,932
1893	3,743
1894	109,763

and 30,000 in bond from the United States.

The following is an extract from the *Globe* of January 25th: "The development of the sheep trade from Canada is being watched with much interest. Several cargoes have arrived recently, however, in which scab has been detected, and the animals were consequently slaughtered. If such shipments continue there is a danger of restrictions being placed on the importation of sheep, which would be a great pity from the point of view of the Canadian farmer. It was believed that the stringent measures taken some years ago had led to the stamping out of the disease, but this does not appear to be the case. It is alleged in some quarters that the cars in which American sheep are conveyed through Canada, are subsequently utilized for Canadian sheep without being disinfected. Of course, this is only a surmise, but it is a fact that the sheep arriving here from the United States are generally very much affected with scab, and almost every other cargo in the last few months has been slaughtered at the port of debarkation in consequence."

In 1886 the quantity of mutton imported into Britain in the carcass was 653,447 cwt., but in 1893 the importation of mutton was 1,971,500 cwt., so the increase in dead mutton was much in advance of the falling off in the importation of sheep. The principal factor in the change is the large quantity of frozen mutton brought into Great Britain from the Australian colonies and the Argentine Republic. In 1890 Australasia sent to Britain 897,148 cwt., of mutton; in 1890 the Argentine Republic sent 435,084 cwt. of mutton to Britain. In 1893 out of 1,971,500 cwt, Australia sent 1,187,458. A Mr. Sutton, one of the Intercolonial Commissioners from Australia, at a sitting of the Commissioners at Ottawa, said that mutton was selling in Sydney at 2 cents per pound. Mr. Fraser, from Victoria, also a Commissioner, said they have 106,000,000 sheep and if they saw a proper outlet they could easily increase them to almost an unlimited extent. He said millions and millions of sheep have been boiled down in Queensland and New South Wales, for their tallow. The freezing and carriage alone costs $2\frac{1}{8}$ cents per pound from the time the cattle are in the yards in Australia until the meat is in London. Sir McKenzie Bowell said to the Commissioners that a slight study has convinced him that Australian mutton can be carried as far east as Chicago at a profit and pay the American duty. G. E. Foster said to the Commissioners, "You ought to be able to do a very good trade under the present tariff, which we reduced very much last season, in frozen mutton along the Pacific slope, because hitherto we have been entirely unable to supply them with the meat that they require, especially mutton, and they have imported it from the United States. I see no reason why you should not cut off a good deal of that trade which now comes from the United States."

Now as to sheep, the United States takes from Canada 330,000—Ontario furnishes 273,944—and Canada takes from the United States 39,000, of which British Columbia takes 29,000. In mutton the United States gives Canada 1,787 lb. and takes 44,452 lb. from Canada. Thus it appears that the United States is our only market for sheep and mutton. Remove the present duties and the Canadian farmer would be benefited.

In breeding sheep for mutton, choose good sized roomy ewes with short legs, broad full chest, and a good round barrel, which would indicate a good feeder with a strong constitution. From whatever breed you choose a ram, have him well bred, which gives the power of impressing his own good qualities upon his offspring. Do not feed breeding ewes a large quantity of roots during the winter, before they lamb, but after lambing they may have a liberal supply of roots along with other nutritious food.

When lambs are about a month old feed them a little grain, bran and oats put in a trough in a pen where the ewes cannot get in, but the lambs can go in and feed. They will not eat very much, but it will pay by the increased growth of the lambs. Castrate, and dock the tails of the lambs when about three weeks old. When the lambs are weaned put them on good pasture and feed a little grain; if the pasture is not abundant there should be a field of rape grown to put the lambs on. Put the lambs on when it is dry, in the middle of the day, for a few days, then they may be left on the rape all the time with a pasture field convenient that they can go into. It will pay to feed a little oats. This system enables the farmer to keep his lambs until after the glut in the market is over and bring the lambs into December.

PORK.

In this age of keen competition and inquiry, a great change has taken place in regard to marketing hogs. It was at one time the rule that unless a hog weighed from 250 to 300 pounds in the dead carcass the price was reduced, but now, those which bring the highest price weigh from 160 to about 200 pounds live weight, with good length of body, good back and loins and deep straight sides. As to breeds, any breed that will excel in the above description is the breed best adapted to the present requirements of the market.

It is calculated that up to 50 lb. a pig gains steadily for the food consumed. At 100 lb. it takes 10 per cent. more to increase the weight than at 50 lb. At 150 lb. it is said to take 17 per cent. more than at 50 lb. At 200 lb. it takes 24 per cent. more than at 50 lb. It has been ascertained by experiment that the food of support, as it is called, takes about 2 per cent. of the weight of the animal to keep up the waste of the body. Therefore a hog weighing 300 lbs. will consume 6 lbs. of food daily before it can gain anything in weight.

About fattening hogs, we ought not to forget that the hog is a grass eating animal, and in fattening treat it accordingly—that is, by feeding clover or roots or some cheap and bulky food along with grain, which in many of the experiments made, seems to be neglected and little but grain fed.

It was long contended that hogs grew and fed more rapidly on cooked than raw food, but where experiments have been carefully conducted in almost every instance it has been shown that the gain in live weight and the gain in weight for each pound of food consumed was greater from the raw than from the cooked food, and that a mixture of feed is better than any one variety.

There are a few ideas that it is well that breeders and feeders should pay attention to. The first is to study the requirements of the markets in which they sell their animals; that it is better for the hog trade generally that pigs should be sold alive rather than killed and dressed at home. When packers get the hogs alive they can kill, cut and cure them uniformly so as to suit their particular trade, and they can afford to pay a proportionately higher price for living than for slaughtered animals.

Hog breeding and feeding can only be made profitable where their winter quarters are dry, warm, comfortable and kept clean, and the animals are fed a mixture of foods. Mangels are excellent feed given raw in comfortable warm buildings along with a little grain or well saved clover hay cut before it is quite ripe. Pigs which are good feeders mature early, give a large return for the food consumed, and furnish long, deep, lean sides of bacon, are the best and most profitable. Pigs kept fat from the time they are dropped and well fed all the time, produce a better mixture of fat and lean meat than pigs that have been lean for a time and then fatted rapidly for the market. Wood or coal ashes are good fed to hogs and are said to save a large percentage of other feed.

There is no doubt that Canada could profitably increase her hog exports to Great Britain. We send 17,288,311 lb. of bacon, of pork, 398,174 lb., while we import from the United States 671,588 lb. of bacon and hams, shoulders and sides. Of barrelled pork we import 4,157,246 lb. from the United States. Of this, 3,856,746 is for home consumption. In 1892 Great Britain imported 575,065,220 lb. of bacon and hams. The United States supplies 451,230,976 lb., Denmark, 52,647,504 lb., and Canada 44,942,016 lb., so I think Canada can with profit double or treble her export of pork with benefit to the farmers.

In summing up as to the production of beef, I would say that the keen competition that the feeders of stock have to meet makes it necessary that nothing but first class animals should be used for breeding purposes; and I cannot impress the idea too strongly that in getting the best of our improved breeds, improved methods of stabling, feeding and caring for them must follow as a necessity. Many of our farmers who have purchased animals of high breeding have failed by only giving such care as they have been accustomed to give to our common Canadian stock. Some say success depends upon getting a good breed of animals, others say that feed makes the breed, while another party says it depends upon the man who handles the stock. In my opinion all three, that is, improved breeds, improved methods of handling and feeding, and a kind, careful, punctual, considerate herdsman to manage the stock, are necessary. Let every breeder and feeder carefully choose the stock best suited to his conditions and circumstances, always selecting the best females to breed from, and never use any but the best males. See that both males and females have good, sound, healthy constitutions, and never feed them to overloading with fat for the show ring, as this destroys the prolific power of the animals and often renders them sterile.

Notwithstanding the keen competition that we are subjected to, I believe that the farmers of Ontario can compete successfully in the meat markets of the world against all comers. An experiment was made by a Scotch farmer in 1890 to test the feeding qualities of Canadian against Scotch cattle. Twelve six-quarter, short horn, Scotch bred bullocks were selected, and twelve Canadian bullocks bought at Aberdeen; after seven months feeding the Canadians gained forty-eight pounds each more than the Scotch bullocks, which at five cents per pound was twenty shillings per head. In 1891 another test was made. The cattle were selected by a judge favorable to home cattle; eight black polled bullocks weighing 7½ cwt., and eight Canadians bought at Aberdeen weighing about 8 cwt. After being fed from the 12th December to the end of July, the Canadian cattle gained 119 lb. each on an average more than the Scotch cattle. The market value of the Scotch cattle increased £5 12s. 6d.; the Canadian cattle increased in market value £10 7s., a difference in favor of Canadian cattle of £4 14s. 6d. The Scotch cattle increased in quality 2s. 6d. per cwt., while the Canadian cattle increased in quality 9s. 9d. per cwt. But taking the increase in weight alone of 119 lb., at 5d. per pound, it is £2 10s. in favor of the Canadian cattle.

Whether or not such favorable results in feeding our cattle at home when compared with Scotch or English cattle fed in Britain is a question, but those experiments go to show that our cattle are at least as easily fatted as British cattle, and as a rule we have cheaper feed.

There has been quite a feeling respecting the sale of foreign meat in the markets of Great Britain. At a meeting of the Royal Commission on Agriculture, held at Kelso, in Scotland, last August, three leading farmers gave their evidence in favor of separating the sale of foreign meats from the sale of home meats. Some went as far as to say that the sale by the same person of home and foreign meats should be prevented and a license imposed upon those who sold foreign meats.

The freezing of beef has proven a failure as far as the Australian colonies are concerned, as in frozen beef all the cells containing the finer juices of the meat are ruptured and when the meat is thawed the juices escape, destroying to a great extent the quality of the meat. Then there is a process of chilling beef so as not to freeze it hard, yet so that it will keep, but it is said it costs more in freight for chilled meat than to take the animals alive to Great Britain.

In the February number of the *Farmer's Advocate* there is an article entitled "Chickens coming Home to Roost," which says that the effect of scheduling Canadian cattle in the British market has had the effect of a larger amount of American dressed beef being steadily increased, and that is steadily fastening its grip upon the English trade. The cattle trade section of the London Chamber of Commerce held a great indignation meeting to consider the combined action of the North American shippers in their endeavor to obtain control of the meat trade of the city of London.

The scheduling of our cattle in the British markets, although it has injured the sale of our fat cattle to a certain extent, may in the end prove a benefit to the Canadian farmers, by inducing in some instances and compelling in other circumstances to feed our own cattle.

There is an enormous increase in the importation of meat, both living and dead, into Britain since the year 1870, in which year the importation of meat per head of the population in the United Kingdom was 5 shillings 2 pence, and in 1890 it had increased to 16 shillings and 5 pence per head of the population. A Liverpool paper says the demand for fresh meat in England has been growing steadily for years, and Canada reaps the benefit of this demand from its climatic conditions. The superiority of its cattle, cheap freightage and the short distance from England, places it far above South America and Australasia as a source from which to draw a fresh meat supply. Then let us maintain and increase the superiority of our cattle.

In conclusion let me say that I think great benefit is derived from meetings such as the present, where we meet farmers from all over the Province of Ontario and the professors from the Agricultural College and our experimental farms; where the professors instruct us in scientific methods and the farmers show what success they have had in the practical work on the farm, so that success and practice meet together, not antagonistic to each other, but joining together and going hand in hand and raising the standard of agricultural knowledge and practice to a higher and more elevated plane in the future than it has occupied in the past.

Mr. HOBSON: I think the paper is so perfect in every respect that there is hardly room to take exception or find fault with anything in it. There are many valuable lessons to be learnt from it. One is, and I think you will all notice it, that along every line, whether it be professional, commercial, manufacturing, or whatever it may be, success is invariably the outcome of the closest possible attention to every matter of detail. You will notice in that paper that Mr. McMillan starts at the very outset, before the calf is born, in being exceedingly careful as to the class of animals from which he will breed, and so it comes right down from the beginning until these animals are shipped. I think we can hardly place too much importance upon that as a valuable lesson—that is the closest attention to every matter of detail. As regards the question of dehorning, up till a year or two ago I was very much opposed to dehorning, and I don't think I could dehorn an animal myself yet; but I have had opportunities of seeing the contrast between animals dehorned and those not dehorned, and I have become a disciple to it. In one place I saw 90 cattle, 45 in each stable, feeding as quietly as a lot of sheep would do; I have seen them in Chicago stock yards, and I have seen them knock each other around so as to cause a great deal more pain probably in 24 hours than the whole aggregate would be if the animals had been dehorned. Then in reference to breeding from immature bulls, I think that not doing so is one of the greatest mistakes which has been made by many otherwise intelligent stock men in this country. In reference to feeding the produce of our farms to the stock, that is one of the most difficult problems I think, the Canadian farmer has to deal with. How to keep up the fertility of the soil, I think, is a matter well worthy of serious consideration. I don't want to say too much in the way of praise of my friend, yet I would again emphasize and repeat that I think he has given us to-night in that paper food for thought and valuable lessons which are well worth the expense and trouble of coming to Toronto for.

Mr. RENNIE: I would like to ask Mr. McMillan how he beds his steers where they are all running together; will they not consume a great quantity of bedding to keep them properly dry?

Mr. McMILLAN: We have hauled a certain amount of sawdust from the sawmill, but we don't think they take more bedding than they do when they are placed in a stall and tied. The biggest stall we have is about 24 by 60 feet, and we have 20 head in that. Then we have the end of the barn, that is 69 feet wide, we put an addition of 40 feet to it, and in that I think there are 26 head. Then we have some smaller stalls. My own opinion is you can keep as many cattle where they are dehorned in a stable in that way as you can where you have to have the passages sufficiently wide to feed from. I went home to Glasgow with the first cattle we dehorned. There were 26 of them, and I remember Mr. Swan, the commission merchant at Edinburgh, coming to me after they were sold and shaking hands and saying, "There is not a doubt that they have brought from 10 to 15 shillings per head more on account of having their horns off than if they had them on."

Mr. Rennie: There is one thing of some importance which I don't think he mentioned in his paper, that is with regard to vermin on cattle. I would like to know the method he adopts to get rid of them. In my experience I have found if that is not attended to when the cattle are first put in that they will so increase as to get on all the stock in the stable.

Mr. McMillan: We have not been troubled with that much lately. We take a pair of sheep shears and clip them all around by the rump and up the back; we find that is where they generally collect first. A ltttle hog's lard will destroy them if you get them before there are many on the animal.

Mr. Thomas McMillan: For the last two years we have used hellebore and a little Portland cement, one part hellebore to two of cement, and dust it on the cattle. We make a practice of dusting it on directly after putting them in the stables.

Mr. Rennie: Do you think you would be bothered providing you were not doing this?

Mr. Thomas McMillan: I do.

Mr. Rennie: We have used seal oil, and if it is properly done in the first part of the stabling you are never afterwards troubled. Now, Mr. McMillan has stated that he finds it most profitable to feed his cattle only moderately through the winter, and then finish them on the grass. But many of us could not follow that system, for our land is too valuable within a radius of a few miles of Toronto for grazing purposes. They can graze very much more cheaply on less valuable land. I find only a very slight difference between the cost of the ration he uses and what I have been feeding. He said it cost last winter 12 cents. He puts the meal at 80 cents per hundred. Last winter the meal cost us a trifle over $1 per hundred, but our entire ration per day costs 16 cents. Now, it strikes me that if I had charged my cattle with only 80 cents for meal and hay at $5 a ton, and so on--I charge $7 for hay—it would bring it very near the same. He did not state the time he feeds them, but I understand from what I have heard him say it is about six months. Now, last year with this ration of mine I got them out of the stables in five months and a half. That is a very important thing, to get them out in the very shortest possible time. With regard to feeding young stock, we usually buy our steers, but the year before last my sons were very anxious to raise one calf, so we did and it was sold when it was a few months over two years old, and after allowing a fair shrinkage it weighed 1,415 lbs., so that is something like what he stated. I think stock feeding is a very important thing, and I was very glad to hear him say with regard to the scheduling of our cattle that he thought it was a blessing in disguise, for before that the greater part of our cattle were going over there to be fattened. That should be done here so as to have the manure on our own farms.

Mr. Jeffs: With regard to breeding from immature males, I am sorry if Mr. McMillan would create a feeling against breeding from young males, because I think the matter is not thoroughly understood. I believe as soon as a young bull is fit to serve at all, if he is not overworked, he will get as good stock as an older animal; but the very moment he is overworked he will beget inferior stock. The younger an animal is put to work the more quickly his potency can be reduced. I have had considerable experience, I have been breeding pure bred animals since 1867, and I have watched this matter very closely, and I think the very best calves of any bull I ever owned have been the first or second calves. I firmly believe it is true, and if you watch closely you will find right along that line that it is because the animal is overdone the quality of the stock he gets is reduced, not because he is worked too soon.

Mr. Elliott. I am sorry there has not been a word said in favor of feeding sheep in preference to so many cattle. It is all well enough for those who have lots of money, good buildings, and so on, to advocate cattle, but for the average farmer, particularly in our frontier counties, sheep are a great deal more profitable, from the simple fact that any man can build a sheep house that is just as good as the very best stable you can build. Therefore, I believe that the country would be decidedly the gainer if the sheep of the country were increased ten fold. We have a better market in England to-day for them than for cattle. I am feeding 75 last year's lambs at the present time. I was told that I must have them shorn and shorn they are, and these lambs are sold for 5 cents a pound to go away in April. I anticipate just as good a profit from these lambs as we have ever had in the history of sheep breeding. I believe there never was a more prosperous time than the present for sheep breeders. Then it costs so little to keep sheep compared with cattle. They are naturally scavengers; there is scarcely a weed but what sheep will nip off close to the ground. Then you can get into them so quickly, and the increase is so rapid. Last year I had 75 lambs from 55 ewes. Out of them I only lost one lamb, and that was a lamb a horse stepped on. These lambs will bring me from $5 to $6 per head, and I challenge our cattle men to show that there is any system of feeding cattle that will pay as well.

Mr. McMillan: In reply to my friend Mr. Jeffs, all medical science goes to prove that no animal can beget qualities that it is not in possession of itself at the time the act takes place. Any man acquainted with physiology knows that an animal fourteen or sixteen months old is not in the possession of that strong, healthy, hardy constitution that an animal of three or four years is. So that I hold yet that the system is false to the core, to breed from a young, immature animal. I know that it is held by some of the best men in Ontario that the prevalence of some of the diseases we have got amongst cattle is due to that. Yet it does not induce that disease, it predisposes the animal to any attack that it might happen to come in contact with.

ADDRESS BY MR. JAMES FLETCHER.

Mr. J. Fletcher, of the Central Experimental Farm, Ottawa, then addressed the Institute on the subject of "Grasses and Forage Plants" and "Fungi affecting Farm Plants, Prevention and Destruction," as follows:

We have noticed in our experimental work at Ottawa that there are few things which are of more interest to visitors than our experimental grass plots I was, therefore, very glad when asked by the Secretary of this Institute to speak of these experiments there, and to have an opportunity to speak of some of the common grasses which should be known to every farmer, but which we find from experience are not.

Grasses and Forage Plants.

There is no doubt at all that the most popular grass in Canada is timothy, and this is justly the case, because there are certain points about timothy which make it a paying grass to grow under most circumstances; but we have found that it is not always the most paying under all circumstances. We will just review some of its qualities. First of all, the hay is easily handled; it is very heavy for its bulk; it is clean and presses easily, and I think perhaps the convenience of handling it, as well as its nutritious qualities, make it more popular than anything else. Not only is it easily handled as hay, but the seed is easily handled and is always obtainable. Timothy is well known in the market and therefore always sells well. But it is not always the best grass, because it has some faults which show that it is not a perfect grass, and therefore should not be grown to the exclusion of all others in all localities. In the first place, there is very little aftermath. In the way in which it is generally mixed for a hay crop, that is with common red clover, the two do not come to maturity at the same time, and therefore that is not the best mixture. When cut too soon—which is if you cut it at the time your clover is at its best stage of maturity—the bulbs at the base of the stems are injured and there is only a weak growth afterwards, and very frequently as a consequence it is winter-killed. Moreover, the very presence of these bulbs which give it strength at the base of the stems, makes it susceptible to injury from insects, mice, etc. Then it is apt to be cropped too close by horses, sheep and pigs, and therefore it is not the best pasture grass we can get. I want, of course, to be understood that it is an extremely valuable grass, and, if mixed with late or mammoth clover, gives hay of extremely high quality, but at the same time I think there is not sufficient cognizance taken of the fact that there are other grasses which are very valuable and which it would pay farmers to know better. Some of these are well-known grasses and extensively cultivated in the old countries, France, Germany, England and Scotland; and our experiments have shown us that, when grown, they are very satisfactory and give very paying crops.

The first I will mention is orchard grass. This is grown to some extent in Canada, and perhaps some of you are inclined to say, "Oh, we know all about that;" but you don't grow it one tenth as much as you ought to grow it. If you were to mix orchard grass with early or common red clover you would have a far better mixture than you have by mixing clover with timothy. Moreover, orchard grass is of very luxuriant growth. It gives a large quantity of nutritious and succulent feed—probably a larger quantity than anything in the way of a fodder grass except Indian corn. Of course, where we can grow Indian corn it really does away with many problems that have to be faced in countries where it cannot be grown. For ensilage or autumn feed, Indian corn is always preferable to most of the other grasses, but we must supplement it. Farmers have found, and particularly so lately, that it is a very wise thing to have some of the other grasses to supplement their supply of ensilage. Now orchard grass, I maintain, is a valuable grass which is not grown enough. It is particularly valuable in dry lands. It likes rich, low ground better perhaps, but it will succeed better even than timothy on dry lands. There is one other defect of timothy, and that is, it is extremely short rooted. It feeds on the top of the soil and is very exhausting to it. Farmers are losing sight of that fact and are sometimes disappointed at not getting a crop year after year from the same land. Unless you top dress it in the autumn with well rotted manure you will very soon have a very short crop.

Another grass that should be paid more attention to, is meadow fescue and tall fescue, for they are both varieties of the same grass. These give excellent, rich and succulent feed in large quantities. Both are perennials. They will last on tolerably good soil for a great number of years, and if you wish to keep your pasture for a long period, by top dressing you can keep it almost as long as you wish.

Other grasses I will refer to—not for their good qualities, but rather for the opposite—are perennial rye grass and Italian rye grass. In this country Italian rye grass is an annual and nothing but that, so that if you sow it, you may expect to see it killed out the first winter. Perennial rye grass will sometimes live through the winter, but in eastern Ontario it will nearly always be killed the very first year. This fact was drawn attention to some five or six years ago, and since that time seedsmen in Canada have to a very large extent eliminated it from their pasture mixtures.

Now, in regard to pasture mixtures prepared by seedsmen, there is no doubt that many of them are very good indeed. They will give you a great return for the money you expend; but they are by no means perfect because they are still advertised by seedmen as good, for they contain a large number of varieties, some of which are not suitable to our climate. In most cases, these grasses are recommended on account of the qualities which they have obtained in the old countries of France and England. Our climate here is entirely different to that which is found there, and plants which succeed there may not succeed here. Many of those grasses which are there recommended for certain characteristics, when grown here do not show these same characteristics. This very perennial rye grass I have mentioned is grown in Scotland very largely on irrigation farms and gives three or four crops a year, but here it is a very weak perennial, and generally at most only a biennial. Another grass, called sweet vernal, is highly recommended for its earliness, while in this country it is not an early grass at all. If it survives the winter, it very seldom shows any stems or even green growth until well on into June. On our plots at Ottawa, at least, this has been found to be the case, and it has just been kept alive for the last five or six years by light mulching in autumn. We find it very seldom throws up its green leaves until the June grass is in flower. Among several mixtures we have tried, I have found this one to give very good results: 6 lb. timothy, 4 lb. meadow fescue, 2 lb. orchard grass, and 1 lb. Canadian June grass, or smooth meadow grass, as it is called in the old country, mixed with 8 lb. of mixed clover. With regard to June grass, farmers are now beginning to recognize the fact that it is one of the most valuable grasses we have for pasture. Grown in temperate climates there is no grass which gives as large an amount of green fodder and feed as the despised June grass of our waysides, and the opinion that it was not of very much value, was, I think, due to the fact that it throws up very few stems. Now the stems of this grass are not particularly valuable nor produced in large quantities, but if they are cut or fed down before they become ripe, the leaves produce a large quantity of feed, and after a very short rest in the summer time, directly the autumn rains come or the cooler weather at the end of August, it begins to produce heavily and keeps right on until it is all covered up with snow. It needs only to be drawn attention to, to show an observant person how false the idea is that this is a useless grass.

The mixture of timothy, meadow fescue, orchard grass and June grass (and in low lands 1 lb. red top as well) mixed with 2 lb. each of these four clovers, mammoth, white Dutch, alsike and lucerne—in all 21 lb. of seed, has given two heavy crops of hay and was then used as pasture for three or four years afterwards. None of these grasses are of an aggressively persistent nature, so that when you want to put your land back again into alternate husbandry it can be easily done by a single plowing.

Mr. Zavitz spoke of lucerne, and I may mention that we have always found it an extremely valuable clover. It grows very vigorously, is deep rooted and gives a large amount of excellent hay very palatable to all stock.

We have also tried at Ottawa with these grasses I have mentioned, many of our native species. Some of these have shown qualities which demand larger cultivation than they have had in the past. I merely mention some of these, because as yet their seeds are not in the market and they are not obtainable. At the same time it is well that the farmers should know that we have these valuable grasses, and many of them can be collected on their own farms. Blue joint (*Deyenxia Canadensis*) is well known in all the low parts of Canada where there are marshes and swamps. It grows all over the country from the Atlantic to the Pacific, and gives excellent hay of very fine quality. The stem is very leafy to the bottom, and it flowers about the first week in July, but its great value is in its being a producer of a large crop of hay of very fine quality.

Another of the valuable native grasses is canary reed grass. This is a coarse grass, which in one form is well known all through Canada as the ornamental ribbon grass of gardens. The ribbon grass is the European form of this grass and will give you an idea of the nature of this variety, except that ribbon grass grows much shorter and does not produce such long stems, nor is it so succulent. The canary reed grass has been grown at Ottawa with considerable success. On the 3rd of June I found a year or two ago by actual measurement that this grass was 3 feet 4 inches high, and this was a few inches higher than green rye at that time. The crop was very much heavier and was an extremely succulent, juicy grass that the cattle liked very much. This is suitable for low lands, and there are many corners and parts of farms which cannot be reclaimed, some parts are rocky and others of a swampy nature that cannot be used and are simply wasted, so that such grasses as these two I have mentioned and another I am about to speak of, would be very valuable for such places as these.

Another grass which I omitted to mention, when speaking of important grasses, but which I wish to speak of now to some extent, is the very valuable Austrian or smooth brome grass. This is perhaps the best grass that we have imported into Canada from the old country. It produces a heavy crop of excellent hay and although rather coarse in texture, is very palatable and produces an enormous crop and is a very permanent grass. But for such places as I have mentioned, which occur on many farms, no trouble will be experienced from it. I wish to draw attention to the one trouble, that it has a running root stock very much like quack grass. I think it is worthy of being introduced very largely into many parts of Canada, and particularly the North-West, because it withstands drouth; but at the same time I do not wish to be made responsible for recommending a grass that some might say is worse than quack grass. Some are terribly troubled about quack grass, but I have never had any trouble with it. If they will only attack it in a systematic and intelligent manner, I have never found a farmer yet who could not get rid of it. And it is perhaps just as has been stated here at this meeting about the scheduling of Canadian cattle, that it was a blessing in disguise, because the little extra cultivation to get rid of it brings your farm into a better condition than it was before or the quack grass would not have got ahead. Cultivate lightly ; quack grass does not send its roots down more than four inches below the surface.

Mr. D. McCrae : Did you grow your *Bromus inermis* on low land ?

Mr. Fletcher : You ask if it has been cultivated on low land. I have found much better success at Ottawa on low land than anywhere else, although all the reports from the North-West say it grows very well on dry land.

Two other grasses I would mention good for mixtures, are tall oat grass and golden oat grass. These are only useful for mixtures. The former is said to have a peculiar bitterness which makes it very palatable to stock, and makes it an addition which they seem to appreciate.

Another kind of grasses valuable for dry lands and for picking up sheep pastures and rocky pastures are the sheep fescues. These have been largely used for this purpose. We have a native grass which is very much richer and gives a very much heavier crop of hay, the flat-stemmed meadow grass, (*Poa compressa*) sometimes called "wire grass" in some districts.

Lucerne I have already spoken of, but I would draw attention to the fact that we have two distinct red clovers, the common or June clover and mammoth clover. The importance of drawing attention to this fact is, that there is about ten days' difference in the time that they nature ; therefore, if you mix June clover with a grass that does not nature till ten days after it does, your clover is not in its best condition at the time the grass is.

I shall not refer to-night, as it is now late, to the fact that timothy throughout the country is generally cut later than is advisable. This is as well known as it is, unfortunately, frequently practised.

Alsike clover you know all about. Then there is yellow clover. The plant known in this country by that name is not by any means the same as that spoken of in the old country as such, which is *Trifolium*, a true clover. This is generally spoken of in England as "Non-Such" clover, and is a *Medicago*. It is not considered so valuable in Europe as the *Trifolium* ; but it is more valuable for us, because it will grow where the other will not.

There is one plant I would like to draw special attention to, because perhaps too much attention has been drawn to it already, and that is a new plant which has been spoken of under the name of "Sacaline." This is a kind of knot grass, or polygonum, and it is said that it will grow 14 to 16 feet high. There is a picture published with a man standing beside it and his head reaching about one-third of the way up the stem. Now, I don't say it is not a valuable plant ; but I do say that it has never been tried sufficiently in this country as yet ; so we don't know what it is going to do. If any one wishes to try it, they had better do so by getting a small quantity. The statement that is made, that it has been tried for a great many years in the United States, I believe to be inaccurate. I believe it has been confused with another plant very much like it, sometimes found in gardens. There is another plant of the knot-weed family with heart-shaped leaves which looks very much like it, which comes from Japan, and perhaps also Russia and Siberia, but it is not the same plant as Sacaline. I think this new plant may have better qualities than this one we know about, but certainly I would advise caution and not to put in too large an acreage at first. I mention it now because one gentleman applied to me lately and told me he had made up his mind to sow this plant very largely, and I advised him to wait till he found someone else had tried it, or try it himself on a small scale.

FUNGI AFFECTING FARM PLANTS.

The other part of my address I see is on "Fungi Affecting Farm Plants ; Prevention and Destruction."

At this late hour, however, it would not be wise to say more than a few words on such a large subject.

The word "fungi" is used by many people to denote something they don't quite understand, and not only is this the case among farmers, but by many others, such words as "microbe," "bacteria," etc., are used very much in the same way. We will leave to the specialists who make a study of these organisms, the working out of the details concerning them, and when they have done their work, you may do as you should do with your experimental farms, let the work be done there, and then you can pick out that which is worth having for yourselves and leave the rest for others more concerned.

It does not matter very much to a farmer what a certain fungus is or how it is propagated; but what does matter to him is, what successful results from careful experiments carried out by specialists can be made use of in operations to save his crops. I shall draw your attention now to just one disease and its practical remedy; probably every one of you has heard of it already. I know this meeting is made up of delegates, in fact the best men chosen as representatives by the farmers' institutes all over the country, and it is just possible that you who are present may have tried this remedy, for it should be well-known to every man in the country. I refer to that serious fungus disease known as potato rot. It is not too great a generalization or exaggeration to say, as was stated many years ago, that of all the potatoes grown in the world every year, nearly, if not quite, half are lost through this disease, and I would go further and say that that loss is unnecessary, because a cheap and practical remedy has been discovered in the Bordeaux mixture. All those who have tried it, have found it has much more than paid them for the trouble and expense of application. Potato rot is the same thing as potato rust. What we call potato rust in the summer is simply one stage of development of this low plant. This develops about the 1st of August, and when you see the rust on your potatoes you will see underneath the leaves a white mould, and if you look at it with a magnifying glass you will see it is made up of minute globules, white threads bearing transparent round bodies. These are the spores, or bodies analogous to the seeds of that fungus, and they are either carried by wind or rain to other plants in the vicinity of the diseased plant and they set up more rust spots on the foliage, or, being washed down through the soil, set up rust spots on the tubers. They both produce the same disease, but we call it rust on the leaves and rot on the tubers. Now, if we can prevent the spread of the rust on the leaves, we have found as a matter of experience that we can prevent the rot of the tubers. We have also found that the Bordeaux mixture is an excellent remedy; this is simply a mixture of six pounds of blue stone and four pounds of quick lime in fifty gallons of water sprayed over the foliage just before the time the rust appears, that is in this part of Canada the last week in July. This operation if properly done will protect these plants from the spread of the rust and also the tubers from the potato rot.

I need but refer to this now. It has been set forth in detail in the Experimental Farm reports and in the reports from the Agricultural College at Guelph, and there are many instances in which farmers all over the country have tried it and been successful. Therefore every farmer in the country has had an opportunity of either using it or knowing that it is a success.

A MEMBER: Is there such a thing as contagious scab as separate from potato rot?

Mr. FLETCHER: There certainly is. There are two distinct kinds of potato scab, if not more. One kind is certainly caused by the low forms of plant life I have referred to—bacteria. This has been proved by sterilizing a section of potato by treating it so that nothing would grow on it, then leaving it for a period and then taking from a scab on another potato a sufficient quantity of virus, that is the poison formed on the scab, and by applying it in a certain pattern—in the instance I refer to the experimenter, Prof. Roland Thaxter, produced his own initials, "R. T." on the tuber. Another form is due to injury by insects. Wire worms are very often in potato lands and they burrow on the outside of the potato. Then the white grub, the caterpillar of the June bug, is also common in the ground and it gnaws the outside of the potato and causes an injury which also is called scab.

A MEMBER: Corrosive sublimate is said to prevent scab. I wished to try it on a small scale last spring and asked for it at a little country drug store; they asked what I wanted it for and when I told them the clerk said that corrosive sublimate would not dissolve in water. I would like to know about that.

Mr. FLETCHER: It dissolves to a certain extent, but I do not know just to what extent. But it will dissolve in alcohol and that could be mixed with water. I don't remember exactly to what extent it will dissolve in water. I have found, however, that the blue stone and water answer the purpose of preventing scab pretty well.

A MEMBER: From experience I have found that the corrosive sublimate is a very good thing. It lessens the scab if it does not do away with it altogether, and increases the yield as well. As to dissolving in water, it will dissolve completely, two ounces to 15 gallons of water. Soaking the tubers an hour and a half before cutting them is the way I have done.

A MEMBER: In using orchard grass and clover, how much of the orchard grass and how much of the clover do you sow?

Mr. FLETCHER: 12 ℔ orchard grass and 8 ℔ clover to one acre. It wants thick sowing.

Mr. HONEY: I am inclined to think that is a pretty expensive seeding, as there is only 14 ℔ of orchard grass to the bushel. I have sowed orchard grass both in England and Canada and I consider it makes a good mixture; certainly it makes good fodder, but I think you could save considerable by putting in less orchard grass and more clover for the first year. I think 8 ℔ of clover and 6 ℔ of orchard grass would make a good mixture.

Mr. FLETCHER: I think the other is heavy certainly, and yours is a good mixture, but the quantities I have given were what I used, and the same mixture has been used by Mr. J. C. Chapais, the Assistant Dairy Commissioner for the Dominion.

DEEP WATERWAYS.

Mr. O. A. Howland, M. L A., President of the International Deep Water Ways Association, and Mr. Brown, President of the Ontario Branch of the Association, having obtained permission to address the meeting on behalf of the above associations, then did so.

Mr. HOWLAND, stated that the object of the association was to induce the Governments of both Canada and the United States, to join in effecting such improvements in the great chain of watercourses stretching into the heart of the continent as would make them a permanent outlet for the products of the country, which, he said, would be of the greatest possible advantage to the farmers throughout the whole continent. The association had had a series of conventions, culminating in a convention held last autumn in this city, and they propose to have another next fall in the city of Cleveland, to which he asked the Central Farmers' Institute to send representatives. The association recommends that the depth of all the channels along the route be made not less than 21 feet, and that all permanent structures be designed on a basis of not less than 26 feet. They also recommend that the Governments of the two countries appoint a joint commission to consider and report fully upon the advisability of the two countries uniting in regard to the work and the share of the expense to be charged to each country; and further that a permanent court should be established for the decision of all questions of an international character which may in any way arise between the peoples and Governments of the British Empire and the United States. Mr. Howland said that the people of the United States were now recognizing the fact that their best route to the sea for the transportation of their own products was by the St. Lawrence river, and that now we have for the first time an opportunity of entering into important negotiations with the United States in which they are in the attitude of petitioners and not we. He considered the fact that so representative a gathering as the meeting of that association, had unanimously passed the resolution relating to the establishment of an international court, one of the most hopeful signs of the times, and that the co-operation of the two countries in this work afforded an opportunity of allaying much of the hard feeling which may have existed hitherto between them. He asked the co-operation of the Central Farmers' Institute in the achievement of their common objects and closed by thanking them for the opportunity they had given him of addressing them on the subject.

Mr. Brown followed. He said that no matter how much advancement was made along the line of grain production, yet if it could not be carried to market profitably it might as well never have been produced, and therefore the question of the improvement of the waterways was one of the utmost importance to the farmer. The growing of wheat in this Province had become unprofitable largely because of the high transportation rates. It costs 12 cents per 100 lb. to transport wheat to Montreal, whereas it should not cost more than 6 to 7 cents to transport it from here to Liverpool. A saving of 4 cents a bushel on wheat on one year's crop would amount to $1,084,382; on oats proportionately the saving would be $1,179,752; peas, $448,470; cattle, $203,000; hogs, $117,000; cheese, $140,000. These figures represent the average annual saving of Ontario for the past 11 years ($3,174,285) and as our production increases the amount would increase. That does not take into account butter and eggs or live stock other than cattle and hogs, and does not include a cent of the saving which would be effected upon all goods imported. Then it would open up to us the markets of the lower provinces which to-day are practically closed to us. There is not the slightest reason why coal from the lower provinces should not be delivered at the dock here for $3 per ton. The lowest rate on cheese from points in Ontario to Liverpool last year was 45 cents per 100 lb., and we made 93,000,000 lb. Now, by direct transportation we could do it for less than half what it costs to-day. Moreover, last year we paid as tribute to the city of Montreal for handling the cheese of this Province the sum of $930,000. Now that money was spent away from our own Province, and more than two-thirds of it would be saved could the cheese have been loaded at the docks in the city of Toronto instead of going to Montreal. We are told we have got about 9 feet of water, but it is but little over 6 at the lowest mark. If we ship it by water we have to trans-ship it at Kingston. If we had 14 feet we would have to trans-ship everything at Montreal; and it is the cost of trans-shipment that makes the cost of transportation by water so heavy, therefore we have fixed on 21 feet, and we are pushing this improvement in order that we may have here as cheap transportation as anywhere in the world. Last year wheat was carried from Duluth to Buffalo, 900 miles, as low as three-quarters of a cent per bushel by boat; to-day to carry it 330 miles by rail to Montreal costs 7 2-10 cents per bushel, or 12 cents per 100 lb. Last year the average carriage from St. Louis across the continent by rail and to Liverpool was 21 cents; the carriage by water, 3,500 miles farther, that is down the Mississippi, across the Gulf of Mexico and over to Liverpool, was only 14 cents—7 cents a bushel cheaper, and carrying it 3,500 miles farther. These are only two cases out of any number that might be cited. Mr. Brown related a case that had come under his notice a few days before in regard to the matter. A gentlemen interested in the manufacture of wooden ware, wishing to ship 10 carloads of washboards to the foreign market, had gone to both railway companies here and the best rate he could get was 38 cents per 100. He then went to the agent of an American road and got a rate of 28 cents, and the goods were shipped to Buffalo, from Buffalo to Baltimore, and across from Baltimore to England, a route which may seem somewhat ridiculous considering the fact that Toronto is only 42 miles further from Liverpool than is New York. But this transaction effected a saving of $300 on the shipment. The gentleman then came to him and asked him what he could do it for if his scheme were carried out of improving the waterways, and Mr. Brown told him, "If you do the stowage it could be carried for 6 cents, but if we had to do the stowage it would be 7 cents a 100." In other words, a saving on that shipment of $920.

The speaker closed by inviting the Institute to send three or five delegates to the convention at Cleveland, and also announced that he would be pleased to hear from the secretaries of all the institutes throughout the Province so that literature on the subject might be supplied to them for distribution. He asked also that the Institute send one or more delegates to the Provincial convention when it should be held, notice of which would be given.

On being asked for some further information as to the establishment of an international court, Mr. Howland said that it was meant as a means of preventing or solving any dispute which might arise through the closer relations of the two countries in consequence of operating this common waterway. That is one object, but the natural effect of it would be the preventing or solving of all disputes between them. Instead of having our quarrels, as now, diplomatically conducted between the Government of the Empire and that of the United States, such as the fishery question or questions relating to our canals, or any other question, we would have a court—of course the detail of the constitution would have to be worked out—my own dream of which would be that it be constituted out of the Supreme Court of the United States and the Privy Council of Great Britain. It would be a standing court to which all questions of international character could be referred as a matter of course without having to agree to have an arbitration and then have another dispute as to who shall be the arbitrators, a further dispute as to what shall be the terms of the arbitration, and a final dispute as to whether the award shall ever be executed. That has been the usual result of our international arbitrations, and I think we have arrived at a stage in our civilization at which that becomes a matter of the past, and that it is quite possible for these two civilized countries, whose law is common to both in principle, to have a court that can dispose of these questions all on common ground. The interest that every citizen of this country has in that is not merely the interest of preventing the future danger of war, but it will have an educating influence on our neighbors to the south of us, and they will gradually learn that as there are no opportunities for war between us there is no necessity of taking that into consideration ; that common interests are under discussion, and they will no longer be afraid that our prosperity may be building up a dangerous enemy on their northern border. It is a step in civilization, and I think that the educated Province of Ontario ought to give a very cordial assent to that principle. While our executive committee were sitting in Chicago in December last, we received an intimation that a great gathering was to be held in St. Louis, called the Trans-Mississippi Congress, composed of representatives from all the Western and Southwestern States. We obtained permission to send delegates from our executive to that congress. They presented our platform and it was adopted unanimously. They not only adopted the last clause referring to the international court, but they amended it by extending its benefits to Mexico. The question of the improvement of the Mississippi is one which, of course, interests all those states along the river. I don't think that was the object of that particular conference, but it is a question which may come up, and which I think that we in Canada in the future might look upon with a great deal of interest and favor, particularly if we can succeed by the establishment of an international court in producing a certain feeling of unity between the two countries on these matters, and by the operation of this conference in settling the terms for the use of international channels that we might get equal benefit of that Mississippi channel. At the time that the United States became an independent country the freedom of the Mississippi to British vessels was one term of the treaty. Unfortunately, at the time of the war of 1812 there were changes made in the existing treaties; they lost some rights in our treaties and we lost the right of navigating the Mississippi. I hope, however, the time may come when the old treaty may be restored in that respect, when we may give them the rights they lost and we may have the freedom of the Mississippi. The Mississippi, though, can never be improved on the same scale as the St. Lawrence. It may be improved to 10 or 12, or possibly 14 feet navigation.

Mr. G. A. Aylesworth : I am sure that every member of this Institute has listened with great interest, and with profit also, to these two gentlemen. I am sorry it is so late in our proceedings ; but I don't see what we can do better now than thank them most cordially for their kindness and the trouble they have taken, and also for the instruction they have imparted, and refer this whole matter to the Executive Committee to deal with.

Mr. Good seconded the motion, which was carried, and the meeting adjourned at 11 p.m.

THIRD DAY—MORNING SESSION.

The meeting was called to order at 9 a.m., ex-President James McEwing in the chair.

REPORT OF THE COMMITTEE ON LEGISLATION.

The Hon. CHARLES DRURY, chairman of the committee, presented the first report of the Committee on Legislation, which is as follows :

To the President and Members of the Central Farmers' Institute :

Your Committee on Legislation having before us the consideration of Mr. McKay's paper on Municipal Economy, beg leave to submit the following report :

1. As to the clause referring to the ward system, That as municipalities already have the power to create or do away with the system, we take no action.
2. As to the clause referring to the reduction of the numbers of county councillors, That a memorial be sent to the Lieutenant-Governor in Council asking for the enactment of a law giving each municipality in the county one representative, introducing the system of cumulative voting, and that such representative have as many votes as it would have under the present system.
3. Referring to the question of auditors, while your committee is of the opinion that many inefficient auditors are employed, it is unable to agree upon any scheme to remedy the evil.

All of which is respectfully submitted.

On motion of Mr. DRURY, the first and second clauses of the above report were adopted.

Mr. DRURY : In moving the adoption of the third clause, I might say that we were unable to agree upon any scheme. I have an idea of my own that I endeavored to bring to the attention of the Government some years since, but I confess it is one that might cause some little friction. The difficulty with my scheme was that there should be in each county some mode of testing the efficiency of those who were applying for these positions. Every one understands that it is a somewhat delicate thing for the Government to interfere in matters of this kind. It would seem like a reflection on the wisdom of the municipalities. Nevertheless in practice we know that the accounts of municipalities are, as a rule, badly audited. I am convinced to day that many municipalities are wrong in their accounts, and the auditors are not able to discover where the mistakes are. And last night we were unable to suggest anything that we thought likely to be adopted by the Legislature to remedy the evil.

Mr. MORRISON : I think if the Government would issue ledgers and have every municipality buy the same kind of ledger for the treasurer to keep the accounts in it would help in auditing a great deal.

Mr. DRURY : It is only fair to Mr. McKay to call attention to what he suggests ; but the difficulty with his scheme would be in a large county like the one where I live—there are 32 municipalities in it, and it would drag the audit along into the middle of the year. It is, however, taken altogether, a most able and valuable paper.

The third clause of the report was then adopted.

The CHAIRMAN : I have had two resolutions placed in my hand intended apparently to cover the same ground, but worded a little differently. I will read them :

Moved by Mr. MAHON, seconded by Mr. ROBERTS, "That this Central Farmers' Institute respectfully memorialize the Honorable the Minister of Education in the interest of doing away with the entrance examination and substituting for it the leaving examination on a fifth form basis, or a basis equal, on ordinary public school lines, to a fifth form standard, as a condition of entrance to the high schools ; and that in our judgment this change, or a change calculated to secure the same results, is necessary to raise the standard of popular education and enable our public school system to reach the largest number of our children with a moderately adequate common school training to fit them for the ordinary business of life."

The other one is as follows :

Moved by Mr. HANLEY, seconded by Mr. STOKES, "That the Central Farmers' Institute favor the views advocated by Rev. Dr. Jackson, favoring the compulsory teaching of a fifth form in public schools."

Mr. G. A. AYLESWORTH : This requires very careful consideration before we take a step so great as would be involved by the passage of either of those resolutions. We must remember that there is a Department of Education, and has been for some years, composed of men who devote their whole time to educational subjects alone. They have their views, and those views are not perhaps like yours or mine. They are in a better position, perhaps, than you or I to know the whole truth about the condition of the whole Province in educational affairs. I happen to know that it is the intention of the Department, as soon as the affairs of the Province looked at as a whole will permit, to make this very move that we are recommending to be made. Here is the point involved : If you ask that the teaching of the fifth form be made compulsory in all public schools you at once make it necessary that there should be a higher grade of teachers in charge of those public schools. That means at once more pay to those teachers, and more cost in the conduct of those schools. My own opinion coincides with that of the Rev. Dr. Jackson, that increased cost would bring increased value, but is the Province at large fully prepared to see the cost of carrying on all those public schools nearly doubled if not quited doubled ? Cannot you in your own localities pick out several schools where it would be a pretty serious business if they had to employ and keep employed the year round a teacher capable of teaching the fifth form thoroughly ? He might have to teach that to only one pupil, and perhaps to none. I am in favor of enlarging the scope of the education given in the public schools, believing as I do that they are *par excellence*, the people's schools, but it requires careful consideration before we go too far, and in that way make more mischief than allowing things to take their course as they have been doing in the last few years.

Mr. ELLIOTT : It is upon the farmers more than any other class that the hardship of the present system comes. We have to send our children to the collegiate institutes and high schools in order to advance their education beyond the fourth class. In my own family I had a girl who passed the entrance examination at thirteen years of age, and in age and formation of character she is not in a position to go to a high school even if I considered it advisable to send her there, yet she is practically debarred from any education from that age until such time as she is sufficiently developed to go to the collegiate. Then the present system has a tendency to bring into the country a vast number of immature teachers, because of the fact that the ordinarily clever scholars are able to pass the examination and go through the model school before they are seventeen. Now, I believe that there is no greater injury done to the children of the country than to place them under immature teachers, because it is a well known fact that children, to a very large extent, imbibe the character of the teacher. I believe there is no factor in the formation of national character equal to the influence of the common school teacher ; I scarcely except the teaching in the ordinary home in this country. It has been said that Arnold, the great English teacher, left the impress of his character upon England for half a century after his time. And in my own experience I can find the impress of the character of teachers we have had in our section ten, fifteen and twenty years ago cropping up in the grit and vim of the scholars who attended that school. That being the case, is it not necessary that we should have the public school teachers advanced ? I believe that the average rural school of the country makes a grand mistake, and our school law makes a grand mistake, by enacting that when a teacher has held a school for three years on a third class certificate he or she is then compelled to step down and out or go forward and take a second-class certificate. A vast army of immature minds is foisted upon the people, and we are compelled to engage them. I think this Institute should memorialize the Government along this line as well as the one we are on. Then you all heard yesterday the difference in the expense with regard to the collegiate institute and the public school. It does not make so much difference to the town people, but to us farmers, who have to send our children into the towns and pay their board and their school fees and books, it becomes a serious matter. I think it is high time that we memorialize the Government to have a fifth class in the public schools, but in that we want in the management of our own schools to do it with a fair share of common sense. I come from a township where I don't suppose there is a school but ought to have a fifth class, but of course there may be some townships where it is not necessary. But surely we can leave it in the hands of the trustees and the people of the section to know what they want.

Mr. Drury : I think there is nothing to prevent a board of trustees now having a fifth form taught. As I understand it at the present moment it is permissive. There is not a scrap of legislation forbidding the teaching of the fifth form in the public schools. Now to ask the Department of Education to compel every section to engage the services of a teacher who can teach it, and force upon the whole country, whether it is able to support it or not, that class of teacher, is a thing I am entirely opposed to it. My friend comes from a part of the country evidently where the people are well off, and where the fifth form would a great advantage, but I ask him to consider the position of the whole country, take a bird's eye view of the whole situation, and remember that what would suit the circumstances of the people of his part, would not suit the circumstances of many of the poorer portions of the Province. Now if he wants the fifth form taught in the schools to which he belongs, there is nothing in the law now to prevent it. All our legislation in regard to educational matters in the past has first been permissive. You all remember when the rate school system prevailed. Then the law was changed so that they might be rate schools or free schools supported by the general taxation as people desired. Well do I remember the pains Dr. Ryerson took to ascertain whether public opinion was ready for free schools. Then, when by the voluntary action of the people they adopted the free school system in more than half of the schools of the Province, he introduced the free school system. That is the line we have been proceeding upon in the last fifty years, and I say move cautiously in this matter. I have no doubt that the Department will be free to grant the change, but I ask you to look at the whole Province and see how it is going to affect it.

A Member : Is a third class teacher not capable of teaching the fifth form ?

Mr. Drury : No, I don't think so ; you would have to have a higher class of teacher.

Mr. Kosmack : The county in which I live is for a great part very newly settled, the people are poor and the sections are small, and to make it compulsory with them to hire a teacher who is capable of teaching the fifth class would be a great hardship. Now, I am very much in favor of as much education as possible in our public schools, but it would be an utter impossibility in our county. The people who want it can have it now if they wish, and I ask this meeting not to make a recommendation which could not be carried out throughout the country without great injustice to some.

Mr. Peart : In regard to third class teachers being capable of teaching the fifth form, I may say that in the section in which I live we have a third class teacher who is teaching it, and doing it satisfactorily for the last three years.

Mr. Hanley : I wish to say that I had not any intention whatever of making it compulsory on any section, no matter how poor, to employ a teacher capable of teaching the fifth form. What I meant was covered by Mr. Elliott in regard to a child thirteen years of age being practically excluded from the public school. What was meant was that it should not be imperative on parents to send them away to a high school when they might be taught as well at home.

Mr. Lick : It is not exceptional at all in our county for a third class teacher to teach a fifth class. Most of our third class teachers to-day hold second class non-professional certificates, and I think the time is not a bit premature for this Institute to ask that this legislation be enacted as soon as possible. I think it is a necessity when we consider that the great mass of the farmers' children are not receiving anything better than a fourth form education. Besides, the expense is going to be much less at home than away from home.

Mr. Furlong: I have been a school teacher for thirty-nine years, and I am of the opinion that the time has arrived when we should have compulsory teaching of the fifth form in our public schools. As to the increased cost, I find in our township, Nottawasaga, we have quite a number of third class teachers teaching fifth classes successfully. And I think that even if there are only one or two to teach they should have the advantage of it.

A Member: In the section in which I live we have a third class teacher and in the section immediately adjoining they have likewise a third class teacher. Our teacher teaches some of my children in the fifth class, but in the other section the teacher there refuses to teach in the fifth form, and my neighbor's children who would like to come to this school are unable to come because they would have to pay additional. They can't go to their own because the teacher won't teach them. Now I hold they should be compelled to teach them. At the present time the teacher can say, "No, that is beyond my duties; go to the high school." Then in addition to these children being sent ten or twelve miles, perhaps, to a high school and the expense attached to it, they are away from home and home influences, and not under the same care and surveillance. I think too, that the children should be taught till they are of a more mature age while they are under parental surveillance.

Mr. Furlong: The educational law as it stands to-day empowers trustees to compel their teacher to teach the fifth form.

Mr. Drury: I understand so.

Mr. Morrison: The motion was to raise the standard of entrance to high school to a fifth form basis. I had a boy who passed the entrance examination when he was thirteen. I was not able to send him away and pay for his board, so I sent him on to school for another year, but the teacher would not teach the fifth form because he was not compelled to. Unless the trustees make a special agreement the teacher will not teach in the higher forms at all.

Mr. Clarkson: The direction in which we are going now is that our children enter the public school, they proceed to the high school and from that to the university. Now, how many of our children pass from the public to the high school, and how many of them who have passed to the high school turn back to the farm? I think instead of extending our education in the line of introducing the fifth form in the public school, we should introduce a system of agricultural education that will tend to lead our children in the direction of the Agricultural College. That would bring our boys back upon the farm instead of sending them to the cities.

Mr. Munroe: I began teaching in 1862 and I laid down the rod on the 22nd of December of last year, and I consider that to turn our children out upon the tender mercies of the world with only the smattering of education received up to the fourth book is a criminal act. I have a child who passed the entrance examination at eleven years of age, but would I take that daughter of mine and send her away to the town, away from home influences, between the age of eleven and fifteen or sixteen? If I had not had backbone enough to teach the fifth class in the school of which I had charge, sometimes in spite of public opinion, I would have had to send her away or teach her privately, and but few can be taught privately. Now it is not necessary that the fifth form in the public school coincide with the fifth form in the high school. There are certain things in the high school which need not be taught in the public school. If a scholar wants to get a course in physics or in the sciences, let his parents send him to the high school.

A Member: I am opposed to making it compulsory to go beyond the fourth class in the public school. I think any child that is not able to take care of itself after getting a good common school education is not worth much. I never went further than the fourth class, and I think I have got along just as well as any. In our common schools to-day we do not get near the proportion of the grant from the Government that we should get according to the way the high school gets it. I think the high schools should be a little more self-sustaining. Take a boy from the farm, and if he learns a trade his father has to pay for him, and why should we put the young fellow who goes to the high school in a more advantageous position than he who learns a trade? I think we ought to make it a little harder to get to the high school. Keep them on the farm; the fourth class is plenty for farmers, and if they don't intend to be farmers I think they should pay their own way.

Mr. Holden: The first thing requisite for a good school in any locality is public opinion; and if that is in favor of a good school I venture to say that no set of trustees will have any trouble in getting one and have whatever our public school law will allow taught. Twenty years ago they had been in the habit of hiring young girls in our school, in most cases it was their first school, and paying them a small salary. The first thing I succeeded in doing when I became a trustee was to hire a male teacher of great experience and give him $425. I said it was far cheaper to give that and get the worth of it than to give $200 and get nothing and lose the time of the children besides; and we have never paid less than that since. There has been no complaint about what we get taught in our school; and I think the present school law is quite sufficient for all we require.

Mr. Mahon: As the mover of that resolution, I might say that if it is read again you will see that there is very little compulsion about it. It is simply a suggestion that the entrance examination be abolished and the leaving examination substituted for it. My purpose was to raise the standard of the school of the masses so as to bring education as much as possible to the masses in the public schools, where the children can be taught more cheaply and where they are under the supervision of their parents. How many, you may ask, of the great masses of the young men of this country are able to reach the high schools? Is not the public school the school of the masses? Then I say by all means, as the Minister of Education said the other night, the greatest guarantee of a people's liberty is an educated democracy. It is not compulsion; I don't believe in compulsion. But how in the name of common sense can you have an educated democracy if you do not raise the standard of the schools where more than seven-tenths of the people attend? If there is any one in this world, except the mother of the child who teaches it its first prayer at her knee, who is instrumental in moulding the character of the child, it is above all the teacher in our public schools He is moulding the character of the rising generation, and it is unfortunate that the profession of public school teacher is now simply a stage of evolution. The teacher only stays in it a little time until he can fit himself for something else where he will get more money. I am not in favor of increasing to an unreasonable extent the outlay from the people's pockets, but I say this: We ought not to be unwilling to give to those who are exercising such an extraordinary, such a paramount, influence over the future destinies of this nation a fair remuneration for the important services they are performing,—a remuneration that will keep the best men in those positions. If we had that we would have a better class of teachers. I don't want to disparage those we have now, but I say look at the figures that were read yesterday by the Rev. Dr. Jackson. Look at the drift during the last twenty-five years towards the higher systems of education. I am not finding any fault with them; they are all right in their place. But have the common schools progressed in like manner? They have not. Look at the cost of educating students in the high schools as compared with the public schools. The high school is something over $30 and the common school something over $7. What is the Legislative grant to the high schools? In 1892 it was $7.90 per pupil, and to the public schools 90 cents. My desire is to raise the standard of the public schools so as to raise the standard of the possibilities of the mass of the people being educated up to the very highest point. And in regard to the expense incurred in getting better teachers, if my friend will compare the figures given yesterday with reference to the cost of education in the high schools with those given as to the cost in the public schools he will find it to be very much cheaper to raise the standard in the public schools rather than let them stop at the fourth form and go to the high school. Now I am anxious that the boys should remain on the farm, but if you want them to remain there you must increase the possibilities of the farm, you must so do it that the young men will be capable of grappling with the problems of life. Those of them who are hungering and thirsting for knowledge find there are no opportunities in the public school to get it, consequently they go to the city and only too few of them come back again. With regard to the Agricultural College, there is no more worthy institution in this country, but what do the professors there tell you? The greatest defect with the very best class of students that come to them there is that they are not far enough advanced in their English education. They are not able to take the full advantage of what is there offered to them. Therefore I say that we are doing a patriotic duty, and we should not be turned aside from doing that duty by any small, miserable parsimony. Even if it did advance the salary of the public school teachers so as to justify the best men in remaining in the profession, I consider it would be money well spent, and it is by far the cheapest way to educate the people.

Mr. MAHON's resolution was then put to a vote and carried.

Mr. McKENZIE: I think there was a little neglect yesterday in regard to Dr. Jackson's paper; I think we should have put on record a motion of thanks for the able paper he gave the Institute, and we should rectify the error now. I have, therefore, much pleasure in making such a motion.

Mr. HONEY seconded the motion and it was carried.

On motion of Mr. BATY, seconded by Mr. PEART, a similar vote of thanks was tendered to Mr. Dearness for his paper on Agriculture in the Public Schools.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

The following report of the Committee on the President's address was then read by Mr. G. B. CAMPBELL, chairman of the committee:

Your committee to which the President's address was referred beg leave to make the following report. That we have carefully read the address through and through and have unanimously agreed to the following changes and suggestions. In his reference to "The extremely low prices prevailing for the staple products of the farm," change "staple products" to "cereals and common horses." A few words after that he says: "and the products thereof selling, as they are selling, below the cost of production," we suggest that it be made to read "and some of the products," etc. We suggest that all of that part of his address beginning with "Depression so great in farm values during the last decade" down to "but a hard, cruel reality which is altogether too prevalent amongst the farmers at the present time," be eliminated or referred back to the President to modify, as we consider the language too strong to represent the true facts of the case. A little further down where he says "The market value of the staple products of the farm has gone down at least thirty per cent on the average," we suggest that it be made to read "Some of the staple products." A few lines further on we strike out the words, "Preachers, teachers and boodlers," each for a different reason which is no doubt apparent to you all. Preachers, because we consider that to include them in this connection would be a disgrace to the farmers; teachers, because they do not now receive the salaries they formerly did; boodlers, because it is an insult to the professions to rate them with boodlers. All of which is respectfully submitted.

Mr. CAMPBELL then moved the adoption of the report.

Mr. MOWBRAY: I must say, as a member of this Institute, that I cannot vote for that report, for it is only a garbled report—a portion of a report. The President has given us an able address, and we may either accept that address or express our disapproval of it, but I must say I think it is absurd to ask us to accept a few suggestions like that.

Mr. STEWART: I think the report is quite sufficient; they suggest what they think is better. It would not do to condemn the whole of the President's address when we agree with a portion of it, and I think the report should be adopted.

A MEMBER: It strikes me we ought to be supplied with data for their opinion regarding the falsity of the address. I am prepared to endorse every word the President said.

Mr. CLARKSON: Is it competent for this meeting or a committee of this meeting to garble the address the President has delivered to us—to eliminate certain portions of it? I contend that the President's address should be published in the reports of the proceedings of this meeting, not the address of the committee. I consider that the committee have stepped outside the bounds of their legitimate jurisdiction in attempting to put words into his mouth that he did not utter, or to take away words that he did utter.

Mr. PEART: As a member of that committee I say that we have not attempted to put any words into the President's mouth which are not found there, neither have we taken the opposite course. It seems to me that it was our duty as a committee to view that address from the standpoint, as we considered, of the actual state of affairs in this country. The committee is composed of parties of both political complexions, but they are a unit on this report. If it is not our duty to present a report of this nature I should like to know what our duty is. If there were no duties connected with it, why were we appointed? If there are duties what are they?

Mr. W. S. CAMPBELL: I have never heard the President's address criticized in this manner, but I would suggest in the future, as printing is cheap, that the president's address should be printed in sufficient numbers before the meeting so that every member may have an opportunity of considering it.

Ex-President MCEWING: I must say I was a little surprised, to say the least of it, at the tone of the report. In the address which I had the honor of giving you the other day, I did not ask this meeting to endorse its sentiments. I did not give that address as embodying the views of this meeting. Those were my views, and as such I gave them to you. I am responsible for them, and I am not prepared to take back one single statement in that address. (Applause). Further than that, if I have time at my disposal, I am prepared to prove every statement in that address. The statement has been made that there has not been a decrease in the value of farm products of nearly thirty per cent. I ask any intelligent farmer in this room to run over in his mind's eye the different staple products of the farm, figure what the selling price is to-day, and look back ten or fifteen years at the prices then; take wheat, at $1.25 a bushel then and 50 or 55 cents to-day; take oats, 25 and 30 cents to day and 35 and 40 cents then; take barley, 35 and 40 cents to-day and 60 and 65 cents then; take beef cattle, a few years ago they were six and six and a-half cents a pound and to-day four cents. Is that not 30 per cent? Take any of the staple products with the exception of cheese and perhaps fruit, and I think you will have to admit that the shrinkage has been fully 30 per cent. Then take the reference to the loss of the farmer's savings. I know, and many of you know, that during the last 15 years there has been a shrinkage in the value of farm lands of 30 per cent. and upwards. You know as well as I do that at the period to which I refer many a young man and many farmers' sons commenced business for themselves. Some of them by their hard earned savings had accumulated some little capital. In other cases the father assisted the son to start on a farm and they invested as a first payment that money which had been earned, and you all know that in many cases by the shrinkage in value that first payment has entirely disappeared. Yet in the face of that this committee come forward and say that that ought to be eliminated from the address—a fact which no man can gainsay. In reference to the preachers and teachers and others mentioned in the way of receiving their high salaries, what do we find the other day? A man brought up a motion to memorialize our governments to cut down the salaries of government officials because of the condition of things. You know as well as I do that many churches will not place their preachers at a station unless a certain salary is guaranteed. You know that they do demand it and they do receive it. You know that the teachers demand their salaries and they do receive them. And yet these gentlemen come forward and ask you intelligent farmers who are so well aware of the facts to say that I stated what was not true. I have nothing to take back. I don't ask this meeting to become responsible for what I said—I am quite able to stand the responsibility myself—and I say again I have not a word to take back. That is my address; it is not as good a one as I would have liked to present to this meeting, but such as it is, it is mine.

Mr. McKenzie: In the first place the committee were little at a loss to know just exactly what position things were in. When that address was read to this meeting did it go abroad as the sentiments of the President or the sentiments of the farmers of this Province?

Ex-President McEwing: This meeting did not endorse that; they simply referred it to a committee for their report.

Mr. McKenzie: I want to set myself right on this point. Why was the committee appointed at all to consider the President's address, if that address had no connection with the Institute, and we had no right to touch it? Do you see the position you have placed us in as a committee? Now I say this, that although I am a Liberal in politics, and while I am a firm believer in the depression that exists in this country in many lines, in farm values as well as others, I consider that the President could have accomplished just as much by more moderate language, and would have pleased the whole of our fraternity.

Mr. Drury: I am not going to take any part in the discussion so far as it has gone, but I do want to call attention to the fact that the President referred in his address to a most important matter, the necessity of introducing some legislation compelling the date of manufacture to be branded on cheese for export. I thought that point would certainly come to the attention of the committee, and I therefore move in amendment to the motion to adopt the report that it be referred back to the committee for their consideration with the direction to consider that portion of the address dealing with the cheese question.

Mr. Whelan: I second that motion.

Mr. G. B. Campbell: The President is our representative man, and if we endorse this address it is the address of the Central Farmers' Institute of Ontario. We considered that he had used language that was too strong, and I think if he had calmly considered the address he would himself have eliminated some portions of it. We felt also that we had no right to add anything to that address, but if we have gone further than what is usually done, got out of some of the old ruts, we have acted and done what we think is best. Of course if it does not meet with the approval of this meeting we cannot help that. This address will be read by every English-speaking people in the world, and we think that that picture is too dark to represent before the word the condition of the Ontario farmer. We admit that there is depression, we admit that times are hard, but that is very strong language, too strong, we think, to send broadcast over the world. And when we send that out as the address of the President of this meeting we are voicing the sentiments of the whole farming community of the province of Ontario, and I claim that is the only position we are in here. Now, about the staple products falling thirty per cent. on the average, some have fallen more than that and some have not fallen that much, but we must drop those that have fallen more than thirty per cent. The farmers who have gone on raising cereals and plug horses and scrub cattle are the men who are feeling the hard times much more than the people who have gone into the fruit industry, raising beef for export, etc. The farmers who persist in following the old lines are the men who are going to the wall.

Mr. Mowbray: I move in amendment to the amendment, seconded by Mr. Munroe, "That the report of the committee on the President's address be not received, and that this meeting accept the President's address and hereby express our hearty thanks for the same." I think it is uncomplimentary to the President to attempt to mutilate his address in the way proposed. He has occupied the chair for the last two or three years, and occupied it with as much tact and impartiality as any gentleman who ever sat there, and I think it is unfair. As to Mr. Drury's amendment, it is very proper, and I would ask Mr. Drury, in case my amendment is carried, to move a resolution instructing the executive committee to memorialize the Government for the legislation he refers to.

Mr. McCrae: In support of the amendment of Mr. Drury, may I be allowed to say that I think the committee have made a little mistake. I think the committee are for two purposes, one is to carry out any suggestions or to refuse to carry out any suggestions which may be made in that address, and if they think there is anything wrong in it to report upon it, but they are not meant to garble or cut out any parts of it. If they think there is anything in it that they don't endorse, say, "We don't agree with this section."

Mr. Thomas McMillan: I agree with the remarks Mr. McCrae has just made. With reference to that part on the condition of the Ontario farmer, which the committee seem anxious to have eliminated, I think he has expressed the average condition of the Ontario farmer to-day quite correctly. The chairman of the committee says that no doubt those who have kept in the backward rut have become in straightened circumstances, but I appeal to you who are their representatives to say, as I feel they think, that the great body of farmers in Ontario to-day are in that rut, though we all know that if the condition of the Ontario farmer was upon a standard equal to these who are assembled here to-day the President's remarks would not apply. It is the President's address, and he has told us he is willing to take the responsibility for anything that is in it.

The amendment to the amendment was then put to the meeting and carried.

Moved by George A. Aylesworth, seconded by John Holden, "That the Executive Committee be requested to endeavor to obtain the legislation referred to in the President's address with regard to the dating of cheese." Carried.

Moved by W. S. Campbell, seconded by Mr. McAdam, "That the President's address to this Institute shall be printed for the information of all delegates to this Institute when they may assemble for business in the future."

Mr. McKenzie: I think the motion is out of order, and we cannot act on it.

The Chairman: All matters of new business will have to be referred to the Committee on New Business.

REPORT OF COMMITTEE ON LEGISLATION.

The Hon. Charles Drury then presented the following, being the second report of the Committee on Legislation:

Your Committee on Legislation beg to present this, their second report.

1. In reference to the matter of statute labor in incorporated villages, your committee cannot recommend its adoption.

2. Regarding the matter of the quarantine on Canadian cattle in transit to Europe, your committee recommend that this be adopted, and that your executive carry out the prayer of the resolution.

On motion of Mr. Drury, the report was adopted.

The following is the resolution referred to in the first clause of the above report:

Moved by Mr. B. E. Aylesworth, seconded by W. N. Dalton, "That whereas no provision is made by the law of Ontario for the performance of statute labor in incorporated villages; and whereas it would be in the public interest that the law should provide for the performance of statute labor in incorporated villages of less than two thousand population; therefore be it resolved, that this Institute recommend to the Government of Ontario that a Bill be introduced at the next session of the Legislature to enact that the same law as regards the performance of statute labor in townships be also applied to incorporated villages of less than two thousand population, on the municipal council passing a by-law to that effect."

Moved by F. BIRDSALL, seconded by H. GARBUTT, "That the Central Farmers' Institute assembled, having learned through Professor Robertson that the Dominion Government intend to assist the creameries to find a market in England for fresh made butter, and thus relieve the congested state of the butter market and open up a market with a steady demand for Canadian creamery butter, and win a reputation for our butter based upon its quality when shipped there without deterioration, we therefore commend the action of the Government in this matter and hope that it will be brought to a successful issue." Carried.

OUR ROADS.

Mr. A. W. CAMPBELL, C. E., of St. Thomas, then read the following paper on "Our Roads."

I thank you very kindly for placing the question of good roads on your programme, and I wish to express my extreme gratification for having been invited to address you on the subject.

Good roads have been discussed ever since our forefathers blazed the first line of highway through the forest, and have been going on slowly ever since. But general action for placing this question into definite form was not taken until last February, when the Good Roads Association, composed of representative men from all over the Province, was formed in this city.

This Central Farmers' Institute, composed of representatives drawn from the great class of the people to be directly affected by the reform, makes me feel keenly the great burden of responsibility which rests upon me in introducing this question.

The man who ventures to introduce a reform generally undertakes a thankless, unpopular, and in some respects a discouraging task. I claim this is for your benefit, and you may be more ready to square the account when you know that I am opposed to high taxes and to the placing of undue burdens upon the farmers. I am only trying to show you a way for the enrichment of your purse and the betterment of your condition.

The best-thinking men among you have observed the necessity of reform in this matter for years past, but municipal councillors have shrunk from the responsibility, fearful of the effect upon their position from the opposition which naturally arises in advocating any great municipal change. But, gentlemen, I have no axe to grind and nothing to sell. I am going to speak freely and independently to you for a few minutes on this subject, knowing you to be men willing to probe to the bottom of any question affecting you, regardless of the consequences. I know there are a number of farmers, councillors and ex-councillors and pathmasters present, but that will not modify my expression. They may trifle with you, but they can't fool themselves. None know better than they the injustice and wastefulness of the system as at present operated, and the simple fact of their being chosen to attend this meeting proves to me that they are men such as I would look to as the most enthusiastic supporters of this movement. Farmers to-day are alive to the situation, and why should they not be?

I was born on a farm, and unfortunately I left it. I know a great deal about it. The man who lives on the farm should be happier for every association of farm life; every farming community is a community of homes. This is something to be proud of. It broadens your manhood, and makes you know that you have a sacred spot to love and defend. It makes you a good citizen. Your interest in the country cannot be packed in a carpet bag. Your patriotism can be relied on. When the country is in peril the great bulwark of defence is drawn from the farms and firesides. The majority of great men have been born on the farm. Your vocation is the prime source of all national wealth, and under proper conditions you should be the happiest and most independent of mortals. By the results of your labor the nation is sustained; these are not the incidents of your calling. Individually you inherit the common foibles of the race, and you are not exempt from the errors and misfortunes which beset us all. Let me remind you in all kindness that in other days you and your neighbors opposed a many great movements which were intended for our common good, and which the lapse of time has placed in the highest niches of human advancement. Men stood at the line fences, sometimes with weapons, to prevent the engineer locating a railway on their land; fire from the engine would burn their crops, and the smoke would poison their stock. But the railways were built—the greatest boon to our country. The sewing machine was taken on sufferance. The old horse-power thresher was not required, for why tax themselves for work that can be done with a flail. But how soon the flail was handed to the Historical Society. The steam thresher could not be allowed in the neighborhood as it was sure to burn everything, and horses were plentiful and a little time no consideration. But how universal is the steam thresher to-day. One hundred dollars was an enormous price to pay for a mower, and why pay this amount when a scythe could be bought for two, and the labor performed by ourselves. But the scythe has gone with the flail. Reapers could never be sold for the enormous sum of one hundred and fifty dollars when their work could be performed by the cradle, and the raking done by the "hired man." But the cradle has gone with the scythe. The self-binder was a wonderful invention, but so long as the reaper would cut the grain and place it in sheaves ready to bind, the self-binder was considered a luxury. Yet to-day it is the farmers' most popular implement. In fact, I may say that there is no great invention of commercial or agricultural value which has proved itself to be time and labor-saving which was cheered at its introduction before proof of its powers was universally adopted. It is not with malice that I remind you of these things, but in this meeting where friendly discussion is the order, it is best that we begin with a frank understanding that we do not always recognize a good thing at first sight. We have often changed our opinion on things because we did not at first understand their value. Observation, argument and experience has helped us out of many an error. Each of the splendid implements I have mentioned has filled a want. They were not born in public institutions, they were not put in use by the vote of the people, they are no part of the public business. They came about by argument, observation and experience. The new implement was shown to do better, faster and cheaper work, and the good natured agent proved to you that you could save money in buying that machine and you accepted it. The cost and profit to the manufacturer have been paid, and you have been repaid an hundred fold by the time, labor and money saved.

Anyone who has had the pleasure of listening to your able discussions during the last few days in matters pertaining to agriculture must be convinced of your great desire to study closely and scientifically in order to economize in every branch of your business. The road that leads from your barnyard to the market is an important part of the machinery of agriculture, and in this as in any other you can economize by the improvement of this machinery, as on all others time, labor and money can be saved. You can go and come when you get ready. You can sell your products when the prices are best; you will not be compelled to wait the pleasure of sunshine and shower, and go only when the roads are good. You will not be compelled to place your products upon an unwilling market at whatever price a crowded warehouse, elevator or railway dictates. You can profitably employ your horses at all times of the year. Teaming can be done when the farm does not require your attention. Business will be regular and all the other advantages with which you are more familiar than I, will result and you will take your rightful place in the business world and increase your profits by decreasing the cost of production. The value of your land will be increased vastly more than will pay for the cost of the improvement.

Now I ask you to give this question your consideration and if there is anything in it don't miss it and fool yourselves. Remember that every great improvement is the offspring of thought. If I was sure you would give this subject the same consideration you gave to other machines before purchasing I would end my speech right here. But the channel of your personal affairs attracts your thoughts every day and in these days of keen competition you have little time to give to the consideration and discussion of public questions. The long use of bad roads and the present system of making and maintaining them has almost persuaded you that they are good enough. But this is a great mistake.

I intend to say something, too, about roads, what good ones would cost and what the result of the improvement would be, in the hope of eliciting discussion and interest in the subject. This accomplished, the task is over, for, as has been truly said, "When the people think the nation moves."

The practical side of road-making. like all practical questions which concern the interest of the individual and the public, involves the study of economy, and this form of study is likely to include computations, statistics, and figures—three ingredients, any one of which is enough to kill in the discussion of a subject which otherwise might make it welcome to the ordinary person.

After this meeting is over I want you to consider this matter, slowly and carefully and with some thought, which I shall undertake to explain. Remember that it is harder to prepare this information than it is to consider it, and that after all my task is greater, and having been undertaken for your benefit you can ill afford to put it aside without a share of your attention. These computations and statistics will not be intricate nor extended. I find it best to talk about this subject in a practical way. I wish you to consider the facts as they have been demonstrated in that department of trade where wagons are employed in the district with which you are acquainted. Every kind of investment seems to have been enriched in value and quickened in its operations by the development of population and by the adoption of the thousand and one methods which forever seek a market in the populous centres, save farming. The farmer and his industry appear to be beyond the stimulating influence of the most modern investments, and while it is true that his methods of tillage and harvesting have been improved and lightened by the use of machinery, it is no less certain that the general prosperity of the farmer has not kept pace with the other branches of society, and that the allurements of gain is no longer conspicuously prominent in the general field of Canadian agriculture. Indeed, it is safe to say that the Canadian farm is not increasing in value. The trouble very largely arises from the fact that other lines of business offer more substantial promises to the business man and the investor. The value of farm property in these days depends not only on the quality of the land, its productiveness and its location, but it must be considered also with a special view to the lines of communication which connect it with the market. Delays, uncertainties and the amount of power required, unnecessary expenses and useless wear and tear are important questions with the capitalist and the investor of these days, and every obstacle which stands in the way of constant and regular business transactions is a blemish which no shrewd tradesman will tolerate.

This obstacle to the Canadian farmer is bad roads. By long use and through ignorance of a better kind he has long endured this sort of roads, and he has not yet learned that all the route from the home farm to the ultimate consumer, the dirty road which leads from his door to the railway station is the line of greatest existence, and that which imposes on him and his neighbors the chief burden of transportation, but which is maintained at a cost far exceeding that which is required to keep in repair the best roads of modern Europe. It all comes from our system of working out the road tax.

For the last four years the *Municipal World*, in which I am interested, has been working on this question with a view to arousing our people to a sense of its importance, and if possible convincing them that this province might enter upon the work of road-building, which would do more, if accomplished, to lift her into prosperity than any other work to which she could direct her energies. We have obtained from nearly every township in the Province returns as to the present expenditure for road purposes, and an average for a number of years past, also statements as to the amount of statute labor required each year. This I did that we might see what was the burden now imposed on the people of the Province in connection with the highways, in return for which they practically receive nothing, for at the end of the year, under the system as now managed, the roads are as a general thing little better and no more permanent than they were at the beginning, and each year the whole expenditure has to be again incurred. This has been going on for nearly a century. If the amount which has been sunk in this manner could be ascertained it would startle even the most phlegmatic of our citizens.

The job of making a ditch in a low part of the road is let for fifty or one hundred dollars. No proper outlet is made for it into the adjoining property; it holds its fill of water, and after a couple of winters the action of the weather and stagnant water causes the sides to slip and in a short time the ditch is filled up. Another job is let for grading a piece of road; when the foundation is not first drained the travel on it in the wet season makes it as bad as ever. Gravel of all qualities is hauled on the road and dumped in the quagmire soon to be lost sight of. In other instances it is put on so thinly as to be of no use. When convinced of this an extravagant quantity is used; the wheels are allowed to rut it while loose; no further attention is paid to it, and in a short time deep gutters are formed where the wheels travel; rains fill these gutters; heavy traffic cuts through—it is damaged rather than improved. In many cases large sums of money are expended for gravel which, owing to the amount of earthy substances among it, is vastly worse than the road would be if this material had not been put on, but the natural soil of the road-bed properly drained and rounded up. Culverts are constructed of perishable material which, on account of its exposure to the varying changes of wet and dry, collapses in a short time under a load, and not only the cost of a culvert but large sums for damages are wasted. Small timber bridges are constructed in ravines and high and expensive grades are made at either end, without any knowledge of the great pressure of the embankment, and the weakness of the structure which in many cases collapses before the contractor has reached home with the people's large draft. Hundreds of dollars are expended in cutting down hills where if the proper pains were taken in laying out the road it could be deviated from a straight line—hills skirted, the ascent made easier and the large cost of reducing the grade, together with the subsequent cost of keeping the gutters open and repairing the damage done by the water and frost could be saved. These amounts, together with the myriad of small items of from five to twenty-five dollars expended throughout the township in filling holes and making small surface ditches, grading patch by patch without any regularity, and many other trifling items of work, make the amount, when footed up at the end of the year, of alarming dimensions.

Roads have been constructed by road work under pathmasters, and good roads can be constructed under the statute labor system, but I claim that more money has been squandered, labor misapplied, wasted, and practically thrown away. Draining, grading and other elementary principles involved in making and keeping of a good road in a great majority of cases is ignored and the work is done without rule, reason or any regard for the ultimate result. All the water that falls on the road is allowed to stand in ditches made to receive it, which saturates the foundation, stands in pools and ruts on the road, and the traffic churns and mixes it with soft dirt until it is removed by the slow process of evaporation. During the dry season this lazy process is put in operation and leaves the roads more susceptible to the damaging influences of the wet autumn weather.

Under the impression that the higher the crown is made the more easily the road will be drained, materials are heaped up in the centre until the sides become dangerous by their slope for the passage of vehicles. The vehicles run entirely upon the middle until it is crushed and runs down, when a fresh supply of material is put on and the road is again restored to its dangerous condition. The sides of the road are but little used except in summer, or until the heavy loads have crushed the middle into a surface apparently compact and smooth. In some places the material is laid in a narrow line along the middle of the road, and the sludge collected from the scrapings of the road or ditches is placed on each side like banks to prevent the stones being scattered by the wheels. These stones are left loose and dangerous to horses' feet and very annoying to the passage of vehicles and offer great resistance to heavy loads. Wagons are forced for safety and convenience to keep in the middle, and it is speedily plowed into deep ruts, which hold the rainwater even when the convexity approaches the form of a semi-circle.

The central elevation is kept dry and the central pressure of the traffic forces the material upon the sides, where it lays loose and unconnected and obstructs the course of the water from the middle.

After harvest the municipal council makes a contract with some man who is in the habit of taking job-work for the repairing of a certain portion of the road, with the special injunction, "be sure and throw the grade high enough." These men commence work and continue for a few days, take another job from private parties, leave the road in a dangerous condition until that job is completed, return late in the autumn and fall to work diligently, not even to be stopped by the equinoxial rains, for the work must be done as contracted for before Christmas. No pretension is made to drainage; fresh loose clods are dumped in the bottom, and all other material, hard and soft, is laid down, forming a convexity of considerable elevation, according to order; a little gravel is spread over the top of this conglomeration just to give it a finish. The work is inspected by the council or commissioner. And how can they possibly refuse to speak the truth? They certify that it is perfectly smooth, and that a great deal of work has been done by the men. The elections are close at hand. The contractors are hard-up and want their money, and the council sees that they get it. As soon as the rains come on the material is saturated and the whole mass is a quagmire. Ratepayers, ignorant of these acts, and without a knowledge of any better system, receive their tax bills with strong expressions of dissatisfaction and exclamations of "grin and bear," pay the amount and think nothing more about it until the next payment is due.

Every road is a structure and needs a foundation. A good road will never be built by accident or maintained by ignorance. It is quite as senseless and futile to attempt to build and maintain a good highway by calling out A, B and C from their various personal occupations to maul and scrape a few miles of soft dirt with hoes and shovels as it would be to expect the same persons under a similar system to contribute their personal labor in the successful erection of a court house or gaol. In either case the proper completion of the work requires that it be done under an intelligent supervisor, and by persons whose knowledge and instruction fit them for this kind of work. Besides these objections, the system of working out the road tax, as at present operated, presents certain features which are inequitable as among the people themselves. The money collected from those persons who agree to pay their assessments in money rather than by personal labor is in many cases diverted to mysterious uses which only the municipal politicians have power to disclose. While on the other hand, the labor is performed here and there by that little squad composed of the youth taking his first lesson, strong in ambition but weak in physique; the hired man proud of his holiday; the middle aged willing to work but more anxious to yarn; the prosperous farmer anxious to work according to the intention of the law but cannot see his way to do more than his neighbor; the veteran roadster whose hair has grown gray anticipating good roads as the result of his many years labor; the grandfather who when his road work is done has completed his manual labor for the year; half a dozen teams, with half a dozen scrapers and no plows, or half a dozen plows and no scrapers; a couple of wagons with bottom boards only, one chain and no clevis, one clevis and no chain, all shovels and no picks, no axes. Teams made up of the family driver and the brood mare; the two-year-old and the grey of twenty winters, clothed with the carriage harness whose usefulness is long since passed repaired for the occasion with straps and strings, for the season is busy and nothing better can be permitted to leave the farm. All work under the direction of the worthy pathmaster, to the music of his tale of almost a half century's experience in this particular line, and who truly sings, "I am monarch of all I survey, my right there is none to dispute." These men count their time so cheaply as to render it in the public service rather than pay a dollar for this labor which is generally applied where it is likely to tend to their personal benefit without regard to the general requirements of public travel.

This system as at present operated is a travesty and a failure. It has been tried everywhere in the Province, and has very seldom proved satisfactory. Such work is a blot upon our civilization, and a scourge upon the industry of the farmers and upon every town surrounded by a farming population. It is a most expensive way of building and maintaining, the least efficient in its use, and the road produced is the most exasperating in its normal conditions of all the roads ever contrived by human hands. Older nations have abandoned it entirely, and their farm property has improved in value. Other systems requiring that the highway shall be properly made and maintained have produced such amazing results in the enchantment of rural conditions that no kind of argument could induce the European farmer to accept the drawbacks and embarrassments of the old system. I am in a position to say from figures obtained from the different municipalities that the money and labor spent by the people of this Province within the last half century would more than suffice to build and maintain 25,000 miles (being one-half of the road mileage of the Province) of the best class of roads. Tax is the tribute which savagery pays to civilization; the entrance fee to community life; the price we pay for the privilege of living together, and for the right to fly a national flag. The typical hermit is forever a typical sloven. He has no ambition, has no visible property, needs no defence, cultivates no friends and, comparatively speaking, pays no taxes. Like every other citizen who uses public property without contributing to the public treasury he is more or less a sponge, because he enjoys the common benefits and privileges provided by the common law and allows his neighbor to pay the bill; he is simply a little lower in the social scale. He is beyond the dignifying influence of the public tax.

Every organized association imposes upon its members certain burdens. These are usually in some measure commensurate with the advantages. We tax ourselves in two ways for the privilege of citizenship. First, an ambition to appear well, to display evidence of our requirements and abilities, for the numerous conveniences and luxuries of social life, satisfy vanity by clothing and adorning our persons and in embellishing our homes Secondly, another kind of tax, smaller in amount yet always more grudgingly expended for those things which we cannot personally own or pay for, but which becomes our property in a reflective way. This is the public tax, money paid under an assessment designed to be equitable and intended for the maintenance of the commonwealth and the improvements of those institutions which are created for the common good. Selfish instincts lead us to despise this tax, and its collection twice a year is carried on by a sort of cork-screw practice which is disagreeable to the individual who collects and to the citizen who pays. Every taxpayer has an interest in the way the public taxes are expended and the public institutions maintained; of the body politic he is a shareholder; of the corporate property which the government controls he is a part owner. The common road is not in fee owned by the public. It is commonly a strip of land in which the public has acquired an easement, a road to travel perpetually for all purposes for the intercommunication and traffic. When the country was new it was easy and simple to adopt colonial methods, and as these methods related in some respects to the use and keeping of the common roads, the road laws of England were borrowed, they were a relic of feudalism. The undeveloped condition of the country compelled us to subscribe to its use, and to yield to the embarrassments and injustice which it imposed. The people were poor individually and collectively, and well might have been excused from attempting to build and maintain our highways in that crude and unsystematic way. The passing century has bred within us a national habit. But the pains and trials of the early settlers have passed. Road-making is not such a question of civilization to-day as it was when the first log was placed across a stream or corduroy laid in a marsh, yet it is to be the greatest issue of the future. We are far behind in this respect. Our patriotic fervor must diminish most discouragingly when we compare our system of highways to those of Great Britain, France, Germany, Norway and Italy. We have rushed along the lines of self-interest, of monopolies and aggrandizments in our haste to be rich and prosperous, and colossal fortunes have been the aim, the attraction and reward of our genius and toil. Consequently we have grand estates, beautiful corporate establishments and bewildering railway development, and with all, when we contemplate the public highways between the towns and rural districts of the entire country we sink back to a point that is a reflection on our pride. We appear to have forgotten the grand principle of civilization is a result of the ease and readiness with which the race communicates and interchanges itself.

Canadian enthusiasm responds all too readily to the prick of self-interest, and to this end it injures the sacrifice of important public considerations. It is depopulating the country and over-crowding the cities. Our cities are growing to their own detriment as against the evident opposite tendency of the country districts ; it is only a tendency of the country districts, it is only a question of time when the climax will be reached in disaster. A parallel statement in regard to the growth of the public enterprise at the expense and sacrifice of the means of communication, and hence the lack of the growth of the country may be asserted with force and may pass without successful contradiction. To save the value of the farm, reserve the staple population of the rural districts, attention must be given to the serious question that confronts us. Public thought must be stimulated upon the subject, and public action must be demanded. The necessity of the great development in the improvement of country roads is not so fully appreciated. What we have exhibited in railway construction must be repeated on the wagon feeders to railway, factory and market town and city development of the country, or we loose our grip and progress. Economic conditions are certainly directing attention along this development. The lowering value upon rural acreage and the inordinate increase of that of cities and towns are corresponding indications. The farm does not increase in value because of its isolation. The farmer is not prosperous on account of not having the many advantages of good roads, and because the younger and more helpful members of his family gravitate to the greater attraction of the town and city where going and coming is easier and where wallowing in the mud is not obligatory ; where mails are oftener and where social engagements centre. Nothing contributes to this condition as does the roadway on which easy and rapid transit is possible. It is encouraging to see farmers' institutes, dairymen's associations, municipal councils, boards of trade and other organizations, taking up this question from a commercial as well as an economical point of view. Commerce and agriculture may here unite on a common platform, in a common cause and to a common end. The time is ripe for enterprise ; value will accrue to city and country with every step of progress. All that is needed is to obtain a recognition of the case and it will triumph. Concerted action is requisite, local organizations should be appealed to and associations, as in church, charity and politics, should be invited, until all communities are educated into demanding this most desirable revolution of the age.

Legislators thoroughly understand the wastefulness of this system but are afraid to propose anything to remedy it for fear the farmers may rise in their might, fearful of an increased burden. I am fairly convinced that the building and maintaining of the best possible highways is calculated to be of the best benefit to the farmers and would both reduce their expenses and enhance their returns, besides materially increasing the value of their land. But I am not by this conviction blinded by the fact that they are only one portion of the people to receive advantages from the carrying out of this work. Posterity will receive the greatest advantages from the building of highways, and this not only in the country but in the cities. The cities themselves, both now and hereafter, will also receive possibly more moiety of the benefits to be derived in a good system of roads, and yet in the face of these considerations, which to any thinking man would seem self-evident, the people within the limits of the villages, cities and towns should assist in paying for the improvements. Many people are opposed to this movement on the ground that they consider that the farmers themselves will be obliged to do and pay for the work, and even this class should be limited to those now owning and farming land. I do not wonder that they rise and forbid the placing of this burden upon their shoulders. It is to prevent anything of this kind that the Good Roads Association was formed ; its object is to stir up the people to a sense of the importance of the question, get leading farmers, pathmasters, municipal councillors and legislators interested; meet, devise and perfect some system under which the benefit of good roads can be had without this, or any injustice being done. Many precedents for legislation may be found in the old world. It is true that some of these would be difficult of application here. Many of them in the first instance were imposed by despotic authority, and are now assented to because the people have learned through experience the advantages they are given through doing the work. But there are other systems in force in some countries, notably England, which with little difficulty would adapt themselves to our institutions.

Again it is feared that the intention is to take the construction and maintenance of the highways out of the hands of the local municipalities and place them under the control of the Government, and in support they refer you to the system adopted in older countries. It is true that national government makes and maintain the main roads of France which are examples of what good roads should be, and that it also does this work in other parts of Europe, but there is a great difference between French and German people and the Anglo-Saxon in this country and in England. In Europe the people are accustomed to the leading strings of the Government from their birth almost to their graves. The Government educates them, they are taken into the army and in old age are provided for by pensions. With such training it is no wonder that the care of the highways is looked upon only as the duty of the Government; but to the nature of the Anglo-Saxon race such paternal care is alien, and the absence of it has largely contributed to make it the foremost factor in the civilization of the world. I would not have it imposed on the people one iota further than absolutely necessary. To enforce law and preserve order is the function of the Government, and the closer it is kept to these duties the better it is for those who are governed. I must confess there is a little too much tendency now-a-days to invoke the aid of the Government in works that should depend for their execution upon the enterprise of the people, and the consequent spread of the principles of centralization. To impose on the Government of the country the making and maintaining of the roads in every county and township would be to largely endanger its power to the prejudice of individual enterprise and lead to the ultimate creation of an army of public officials who would fatten on the people and virtually place them at the mercy of officialdom. This is where I consider that a great reform is needed and which is one of the strong objections to the present statute labor system, that in townships owning 175 miles of roads there are one hundred and seventy-six officials (pathmasters). But while I am opposed to the Government having anything to do with the work of construction and maintenance, I am of the opinion that it is right that the Government should go into partnership with the people, and assist them, if so they desire, in raising money by the issue of debentures to extend over a long period of years at a low rate of interest, and that the administration, supervision and execution should be entirely in the hands of the local authorities.

The reason for this is that the Government can afford to loan money to municipalities at a lower rate—say four per cent.—and possibly as low as three; this loan in large works of improvement being made without being burdensome to the taxpayer. Local authorities can usually borrow money at much lower rates than are current in the country, yet they cannot, without the assistance of the Government, borrow at anything like three or four per cent. The length of time given for repaying the loan are such as make the payment, including interest annually required, a very small one.

A feeling has grown among some farmers that this agitation was originated by bicyclists, and this they attempt to prove by the fact that no bicyclist is opposed to the agitation. They think that the public roads are an industrial value to the farmer and to the merchant and should not be interfered with by the mere proprietors of playthings. All that is necessary to prove the absurdity of this notion is to discover who were instrumental in forming the Good Roads Association of Ontario, and who are discussing this question before farmers' institutes all over the Province. We have more respect for the intelligence of this province than to believe that after this question has been properly laid before them they will discard it simply because a certain class is in favor of and would be benefited by the movement. There is a curious perversity in human nature which causes us to condemn new things and things we know little about, and this is particularly true whenever the intrusion is of such a kind as to violate old methods and old traditions. It has been truly recorded that the biggest fool of his day in the estimation of his neighbors was the man who carried the first umbrella. Railroads, telegraphs, sewing machines, knitting mills, self-binders and every variety of commercial and agricultural machinery have been brought out in the face of bitter opposition, and not the least fierce and stubborn of this came from the farmers. They were all good, honest people, but the most of those who fought the improvements have long since been laid in their graves, and their children and grandchildren are profiting by the inventions they sought to destroy. And so if we are brought to see that bicycles are really of great use and incalculable benefit to the human race, we will more quickly concede that the men who use them are justified by the wisdom which in this particular has been superior to his own, and that the use of the bicycle in no way militates against either the reputation or the character of the rider, nor against the dignified position he has assumed as your associate, in the contention for public road improvement. There is an old saying that "Life is not to live but to be well." If you will think for a moment you will probably conclude that your own rugged health is due to the pure air and bright skies that surround you in your labor; you will also admit that there are thousands of good people denied the happiness which belongs to farm life, who have no means within the limits of their vocations by which they can keep pace with you in the matter of that muscular condition upon which their health so much depends. And so it is that a great many people who are not farmers have become wheelmen, and this may also be one reason why farmers who, as a rule, have no need for air or exercise beyond that which comes in the daily course of the work have not come to cycling as a health-giving means of recreation. Men of judgment, thought and experience use and praise this vehicle. Not only does it afford to many that which would otherwise be unobtainable—a health-giving form of exercise—but it enables them to derive all the advantages of travel which previous to the advent of cycling was out of their reach. Of the bodily good derived from so manly and healthy an exercise, of its assistance in maintaining a sound mind in a sound body, of the relaxation of the exercise in the open air, of the energy it creates, I have no need to speak, but only emphasize the fact that the benefits of cycling to the men of the present day are almost incalculable. You will see hundreds of bicycles leaning against the walls of factories in manufacturing towns, having carried the owners from their homes to the workshops. They have been adopted in the army service of several European countries. They are used in England, France and Germany by men of all trades and professions. In this country thousands of dollars are invested in their manufacture. They have taken a strong hold in every civilized community, and many farmers like others appreciate their value and use them in their frequent journeys over country roads. And since these machines are used as a sort of carriage by thousands of our best citizens the common prejudice against bicycles should not be so hopelessly fixed as to prevent a concurrence and cooperation between the farmers and the wheelmen in the question of better roads, in which all have a mutual interest. Every section of the community which is profited tends in some way to benefit the remainder.

Wheelmen do not co-operate in this question for the purpose of bicycle riding. They are farmers, land owners, owners of horses, merchants, manufacturers and tradesmen of various kinds requiring the daily employment of heavy wagons and the transportation over common roads of thousands of tons of crude and unfinished products. They are taxpayers contributing largely to every improvement and reform, and in this as well as others will bear their just share. The main reason that they are so universal in this movement is that their mode of transit is rapid and of such character that they view more closely the condition of our roads, and know from experience the waste of labor that is involved in the hauling of any wheeled vehicle over a rough road and through deep mud. They know that the labor necessary to haul a vehicle over these roads is frequently ten times as great as the same loaded vehicle would require if the roads were smooth and hard, as it can be easily made by a simple method of construction. They know particularly the great loss of labor, time, horseflesh, wear and tear which the use of these roads imposes upon farmers and merchants, and in trying to impress this fact they are simply preaching the same sermon that your patient friend the horse would have preached years ago as well as now if blessed with the gift of speech.

Location. None of the institutions in the domain of common property imposes as great an expenditure of unnecessary labor and money as that imposed on the public by the ignorant and incompetent methods employed in laying out country roads. The most of them in the older settled townships have been located for many years, and what I may say will have no direct bearing on the question of their immediate improvement, but the opening up of new districts makes it necessary to lay our new roads advantageously, while many of the older and more important ones might be abandoned in favor of shorter and better ones and easier and less expensive grades. In this particular, costly errors and permanent blunders have been made which fasten themselves as everlasting tasks on the road and its users, and the worst of it all is that those errors become more costly as the use of the road increases. In locating your road do not let it rise at any place above the highest terminal point if possible. Remember that every violation will simply require every load to travel a certain distance up hill with the unavoidable prospect of travelling the same distance down hill and that this same exertion is a constant tax upon all travel which is carried over the road. It will not always be possible to adhere to the principles of this rule as ridges and hills might intervene, but, where they are met, cross ridges at their lowest place and make your grade as light as possible. Go round a hill rather than over it if it is reasonable so to do. It may not be as short to go round as over, but you can often afford to go round to avoid steep grades rather than lessen the value of your load. Every foot added to the steepness of the grade will decrease the size of the load. When it is necessary to carry the road from a lower level to a higher make the slope as long and as gradual as possible. An abrupt rise, without due reference to the steepness of the grade, presents an obstacle which limits the maximum load which can be hauled over the road. Besides these considerations, you must have in mind the location of adjacent roads, building connecting roads, the condition and convenience of surrounding land and other features, all of which will call for the exercise of sound discretion.

Drainage. Water is the great destroyer of roads, whether improved or unimproved. It has no proper place in the road and should be carried away from and out of it as fast as it falls. In cold weather it freezes, forming frost and ice, heaves and swells the soil of the roadway, dislodges and throws down masonry of retaining walls, bridges and culverts and in warm weather softens the earth, destroys the foundation and consequently the whole structure. The one rule, "Get the water out and keep the water out," is indispensable. Drains should be constructed on each side of the grade about twenty feet apart, at least one and one-half feet in depth below the surface at the lowest point, and should have side slopes of one foot horizontal to one foot vertical, and the grade between these ditches should be drained in such a manner and to such an extent as the circumstances may require, either by tiles running lengthwise on either side of the road metalling or commencing at the centre and running diagonally to the side ditches from four to eight rods apart or by drains constructed of boulders, broken stone or loose brickbats. This question of draining the grade is a very important one, for most ordinary soil has an obstinate tendency to hold water. Its composition is more or less of a sticky, tenacious substance which when wet lays holds of every solid material that is brought in contact with it and forms an obstacle to the free passage of water.

Earth Roads. Earth roads, which are those principally used in this country, stand lowest in the claim for excellence and durability, and highest in the cost of thorough repair, of all the land highways adopted for the public use. By earth roads I mean those roads which are made from the natural soil found in the line of the roadway, including sand, loam, gravelly earth, and what is a very common mixture of two or more of these. Earth is rarely adapted to the making of a good wagon road and never adapted to the making of the best and most permanent of roads There is, however, a vast difference between the right and wrong methods of making and maintaining an earth road. The methods adopted will depend on their efficiency, the cheapness with which loads are hauled, the number of break-downs which occur during the year, and the size of the load which your horses can haul over them. Earth is commonly thrown up from the shallow side ditches and left lying in the centre of the grade where it is so placed as to imperfectly fill the ruts and holes. The passing vehicles compress this road in two shallow gutters corresponding with the direction taken by the wheels on either sides. The water gathers in quantities in these depressions and the continuous action of the wheels causes ruts in the material softened by the water until in the wet season a wagon sinks into the mud to such a depth as to render them almost impassable. Shallow side ditches are of little or no value. They should be of sufficient depth below the surface at the lowest point as to lower the water line sufficient to leave an unyielding foundation for the surfacing material under a load. Water stands for days at a time in deep ruts when nothing intercepts its flow into the side ditches except a narrow strip of clay which forms the sides of the roadway. This barrier prevents the passage of the water, and in such situations, unless the surface of the road can be kept properly sloped and hard at all times, side ditches are in no sense sufficient to insure proper drainage of the road. The surface must be properly crowned by rolling so as to immediately convey the water from the road and both maintained in this condition.

Gravel Roads. Gravel roads have a distinct advantage over common earth roads in point of usefulness, for the force required to haul a load over a well made dirt road is much greater than would be sufficient to haul the same load over a well made gravel road. The question of "what is gravel?" put to a dozen pathmasters would, I venture to say, bring forth as many answers, none of which would probably be very accurate. There are two kinds of gravel, one which will pack under travel and one which will not. This is due to the small proportion of clay or earthy matter contained in the former, which unites and combines the material together. Sea-side or river-side gravel consists almost entirely of water worn and rounded pebbles of all sizes which easily move and slip on one another. It is unsuitable for road covering unless other materials are mixed with it. This is difficult to do in order to secure perfect bond. The gravel for the top layer must be hard and tough, so that the wear will not pulverize it and convert it into dust and mud. It should be coarse, varying in size from one-half to one and half inches in diameter. Gravel roads can generally be told by the crisp, gritty sound made by the wheels as you drive over them, which is more or less distinct as the condition of the road varies, but is always present in good gravel roads which to the close observer will fairly indicate its quality, and in some measure the integrity of its maker. On ordinary roads the gravel should be eight feet wide and about nine inches in thickness, placed in the excavations made to receive it. The surface of these excavations may be made level. A layer four inches thick of the gravel should be first spread upon the road and then thrown open for travel until it becomes tolerably well consolidated, when the remainder of the material should be put on and kept in shape with a rake until thoroughly compacted. This work can be much better done by the use of a six-ton roller. The depth of the excavation should be such that when the gravelling is put on the whole crown of the road bed will be regular and uniform.

The question of materials to be used, and how to obtain them, is of the greatest importance in road making and often difficult to determine. It would seem to be a common notion that many who have essayed to enlighten the public on this subject, that stones suitable for road-making are obtainable on every farm, and all that is necessary is to encourage farmers to have them properly prepared at their leisure and delivered on the road. On the contrary, although there is an abundance of stone on most farms, those suitable for first-class artificial stone-making are quite uncommon. Stones gathered promiscuously from the surface of the field, though they may do very well to patch up a small piece of mud road, are most likely unfit to be used even on the poorest kind of turnpike. If generally of a good quality they are sure to be mixed with soft and worthless ones which spoil the whole. Even where there are quarries of hard stone it is usually of stratified formation with layers of different degrees of hardness; even if generally good they are devoid of that uniformity which is so essential to making a good road. A quarry of road stone to be worked to advantage must be situated very near a railroad and have a track convenient for loading cars direct from the crusher. Breaking stones by hand will soon be a lost art. Stone for surfacing a road should be uniform and possess a great degree of hardness. The best measure of the quality of stone for this purpose is the power of resistance to crushing force, though it appears from experience that the qualities of hardness and toughness are not always the measure of resistance to abrasion or the wearing away by the contact of horses' feet and the passage of vehicles. The material employed for stone roads should be both hard and tough. Hardness is that disposition of a solid which renders it difficult to displace its parts among themselves ; thus steel is harder than iron and the diamond almost infinitely harder than any other substance in nature. The toughness of a solid, or that quality which will endure heavy blows without breaking, is again distinct from hardness, though often confounded with it. It consists of a certain yielding of parts with a powerful general cohesion and is compatible with various degrees of elasticity. The virtue of broken stones on roads lies not so much in the support it offers to vehicles as it does the protection it affords to the natural soil by shielding it from the effects of moisture. The weight must really be borne by the natural soil, which does in fact carry the stone road itself as well as the carriage.

Some geological knowledge is required to make a proper selection of materials. The most useful are those which are the most difficult to break up. Such are the basaltic and trap rocks, particularly those in which the hornblend predominates. The greenstones vary in quality. Flint or quartz rocks and all pure silicious materials are improper for use since, though hard, they are brittle. Granite is generally bad, being composed of three heterogeneous materials (quartz, felspar and mica,) the first of which is brittle, and the second liable to decomposition and the third laminated. The scientific granites however which contain hornblend in the place of felspar are good, and better in proportion to their darkness in color. Gneiss is still inferior to granite, and mica slate is wholly inadmissable. The argillaceous slates make a smooth road but one which decays very rapidly when wet. The sandstones are too soft. The limestones of the carboniferous and transition formations are very good, but other limestones, though they will make a good smooth road very quickly, having a peculiar readiness in binding, are too weak for heavy roads and wear out very rapidly. In wet weather they are liable to be slippery. It is better to bring good materials from a distance than to employ inferior when obtainable close at hand. No large stones should be employed. Whenever a carriage wheel or horse's hoof should fall eccentrically on a large stone it is loosened from its place and disturbs the smaller ones for a considerable distance round it, thus preventing their consolidation. If too small the stones crush easily, but on the other hand the less the size of the fragment the smaller the interstices exposed to be filled with water and mud, and the sooner they will make a hard road. For roads little traveled and over which only light wagons pass, the stones may be reduced to one inch in thickness. Some angular stones are the cardinal requisites. When of a suitable material of proper size and rightly applied to a well-drained sub-grade they will unite and consolidate into one mass, and almost as solid as the original stone, with a smooth hard and unelastic surface. The stones should be nearly cubical as possible and the largest of which in its longest dimensions can pass through a ring three inches in diameter. In reducing them to this size there will of course be smaller ones in the mass. Twelve inches of well consolidated materials in good condition will be sufficient for roads of the largest travel and will resist all usual weights and frosts. Macadam considers from seven to ten inches sufficient, the latter depth of well consolidated material being shown to be quite enough for the most frequented roads, and six and eight inches enough for others. The thickness should vary with the solid and nature of the materials and the character of the travel. It should be such that the greatest load will not affect more than the surface of the shell, and it is for this purpose chiefly that thickness is required in order that the weight which comes on a small part only of the road, may be spread over a large part of the foundation.

Stone Roads. Earth roads as main thoroughfares will soon be a thing of the past, and the time will soon come when such roads will give way to stone. The latter costs more in the first outlay, but is much cheaper in the end. In order to obtain material in municipalities where rock is to be found, they should have in their possession one or more rock crushers. These machines should be simple in construction and light in weight, yet possessing the important qualities of strength and durability and efficiency. For the last fifteen years manufacturers have been making improvements on these machines, so that today those manufactured cannot fail to give results which will prove their value. The amount of product obtainable from any crusher is governed by the fineness to which the stone is crushed, the speed at which the machine is run, the diligence with which it is fed, and the character or quality of the stone used, varying from ten to twenty tons per hour. They are usually mounted on trucks for portable use, and are moved and operated along rivers where boulders are abundant. A suitable attachment to these crushers is an elevator which carried the material to the top of the bins roughly constructed to hold the product which passes through a screen dividing the materials into three grades, depositing each in a separate bin. These bins are provided with chutes which are constructed at sufficient elevation above the ground to permit of a wagon passing underneath to receive its load, the chute is opened and the wagon filled without any cost. These machines cost from six hundred to one thousand dollars. In the construction of these roads there are a few points which would seem to bear investigation. One of these is whether the material used in surfacing the road should be broken small of uniform size, or should have a foundation of large stones covered with those finely broken. The first of these systems, called macadamizing, has derived its name from one who perhaps has done more than any other to enlighten the world on the subject, and give an impetus to the improvement of roads. Stone roads before the time of Macadam with a few exceptions were made without any pretension to scientific construction and were composed of stone laid promiscuously and through which horses and vehicles could clamber without actually sticking fast. These were described by writers of the times as the most horrible invention that could be conceived. Macadam, though not the first to discover the advantages of having the surfaces of roads covered evenly with stones broken small and of uniform size, was the first to bring this system into prominent use, and being very energetic and persevering he succeeded in making a complete revolution in road-making not only in Great Britain but in the civilized world. In building stone roads in St. Thomas the stones were supplied from the quarry in three grades of coarseness. 1. Screenings, consisting of stone dust and small particles of stone not over five-eighths of an inch in thickness. 2. Egg, consisting of what passes over the five-eighth screen and will pass through a one and one-half screen. 3. Tailings, or what is too large for the one and one-half screen, averaging from two and one-half to three inches in size. A small coating of the largest size six inches thick at the sides is laid on a prepared sub-grade and rolled until it is well consolidated. If possible it is watered or advantage taken of wet weather to facilitate the binding of the material. This is coated over with stone of the second size to a depth of three inches in thickness and the road is thoroughly rolled. On this is placed a layer of screenings sufficient to fill the surface interstices between the stones and to cover them. This last coat like the preceding one is watered and well rolled. In place of screenings, fine gravel or very coarse river sand may be used, but on no account fine or dirty pit gravel is admissable. Coarse pit sand may be allowed after having been thoroughly washed so as to remove all earthy matter and the finer particles of sand which could work down between the stones and prevent them from binding and thereby convert the macadam into a loose mass of rounded stone little better than ordinary gravel. The great object is to cause the stone to consolidate under traffic into a fine, compact, and smooth roadway. If any loose earthy or other fine material be mixed with the stones they cannot become consolidated.

Existing Gravel Roads. On a number of roads throughout the country municipal councils have expended considerable money in reducing grades and putting on gravel, but in the majority of these cases gravel has been put on without any attention being paid to the reduction of grades or the proper formation of the road-bed. It has been found that these roads rut deeply in the wet season and consequently are rough and unpleasant to drive on during the remainder of the year.

Remedies for such roads are :

1. Have the road properly drained according to the specifications herein given for the construction of new roads.

2. By the use of road machines and a gang of men commence at the edge of the gravel and work to the gutters as hereinbefore described, leaving the road crown as if building a new road. See that the gutters have proper and uniform fall for the surface water and that the trenches are made to the side ditches.

3. Put on a sufficient quantity of gravel of the best quality obtainable to complete the crown of the road and carefully watch it with a rake until it has become perfectly

consolidated by travel. Never neglect to see that the rake is sufficiently used to prevent the formation of ruts; and maintain a proper crown to the road so as to secure the shedding of the water.

4. Where grades are steep and irregular, and can be reduced at reasonable cost, it is advisable to make such reduction before expending any further time or money in grading, in which case the present gravel should be taken and laid to one side that it may be relaid; but generally where there are slight changes it is not advisable to break up the old foundation in order to secure perfect uniformity of grade.

Maintenance. Earth roads should be kept smooth, hard, up to grade and cross sections by the addition of suitable materials at frequent intervals and in small quantities at a time on all places out of grade, securing such a surface as shall quickly convey the water to the side ditches. The latter should be kept open, of uniform and sufficient slope, free from rock ridges, depressions and continuous to one natural or artificial outlet. As regards to the maintenance of a road of this class, it seems hardly necessary to say that the way to keep it good is never to let it get bad. In nothing is the old adage more applicable. Every improved road should be watched over by a careful superintendent, with material always at hand to even up and smooth over all irregularities as soon as they occur. This is not only the best but it is by far the most economical method of keeping a road in repair, for there is nothing more deeply demonstrated than that the wear of a road increases in a geometrical ratio as its condition deteriorates. It will, however, sometimes happen, where the travel is very heavy and continuous, that the road will become so worn as to require a complete resurfacing. The surface of the old bed should be slightly loosened with a pick before the new material is spread on so that the whole will combine better and form a solid mass. There are now machines for doing this, in the shape of a steam roller with a pick attachment, which are said to do the work better at a great saving of labor. The advantages of compacting a road with the roller before it is used for traffic is so obvious as to need nothing more to be said on it. If not done with the roller it must be done with travel, which is bad for the road, as it wears away rapidly in the process, and bad for those who use the road to be compelled to do at their own cost what should be done by those having charge of the construction. The friction or resistance to draught on a road with deep ruts and thick mud is four times as great as on one in good order. This shows the importance of a perfectly kept road. An incidental advantage is that the prompt removal of mud after every shower will prevent the annoyance of dust so generally an objection to roads, but not at all their necessary concomitant. A road kept up by daily attention needs no repairs, but if it is put in order only at intervals the injuries to it would have been increased to geometrical progression which render very serious repairs necessary. It will be found cut into deep ruts and irregular depressions and often lower at the middle than at the sides. It must be put into shape and restored to its proper cross section by cutting down the sides and filling in the middle parts. Only a thin single coat of stone should be applied at one time—not more than a cubic yard to a rod superficial. The surface of the old roadway may be lightly picked or lifted with strong short picks, merely burying the point one or two inches deep so that the new material may be more easily united to the old one. This is especially necessary on declivities to prevent the stones rolling down the slopes. When the road to be repaired is one which has been originally formed of large stones and of superfluous thickness no new material should be brought into it, but the old stones should be loosened with picks, gathered with strong rakes to the sides of the road and there broken into the proper size.

The surface of the road having been put into proper shape, the broken stones are to be returned to it, being scattered uniformly and thinly over the surface of it. Only a small piece of road should be broken up at once, but the whole width. The old plan of repairing would be to fill up the holes with the additional supply of the same large materials. But the methods here recommended make more work for men and less for horses, and produce a great saving of expense. The best season for repairing a broken stone road is in the spring or early summer, when the weather is neither very wet nor very dry, for either of these extremes prevents the material from consolidating, and therefore produces either a heavy or a dusty road. If made at this season the roads are left in a good state for the summer, and become consolidated and hard, so as to be in a condition to resist the work of the ensuing winter. If several depressions are found very near each other, cover the first and attend to the rest after the first has become solid. The ruts which are formed should not be filled with loose stones, for this would make longitudinal ridges for harder material, but the laborer should work the rake backward and forward on each side of the rut and across it ; and if he does it with his eyes shut he will do more good than by taking pains to gather all the stones he can find to place in it.

The number of men required by this system of constant watchfulness may at first seem an objection, but the expense will be amply repaid by the advantages obtained. Each laborer should have a certain length of road assigned to his special care, and the most intelligent and trustworthy among them should be made inspectors over the others for a certain distance. At times unfavorable for working on the road they should be employed in breaking stones. With a reversible road machine, properly managed, five miles of well-graded and well-drained earth road can be repaired. This operation should be repeated once a month for eight months in the year, and in the case of a properly drained gravel road ten miles can be repaired in one day.

The principle on which good roads ought to be built is little understood even in the most thickly populated districts, and in those sparsely populated it is absolutely unknown. And the cry that civil engineers of to-day are booming this movement to further their own ends is absolutely without foundation. In his profession the civil engineer is possessed of a knowledge of the nature and behavior of materials, and the designing and construction of large works, and from the peculiar nature of that profession he possesses a knowledge of some of the main principles involved in the art of road-making. But as for the road-makers such as we require to-day, they must be found. However, there are a great many men throughout the country, even pathmasters, who have a good practical knowledge of the principle of construction, besides other men who have experimented in this matter, who will be of great assistance in formulating a new departure in this line. This question is one easy of mastery, and for which the required skill must be acquired by an adequate number of our farmers' sons who are now being forced from the most healthy and ennobling occupation to the already crowded professions, by encouraging them to make a study of the art of road-making in the same manner that they now study technical farming. But the main obstacle is a financial rather than a technical one, and the great question is whether or not the investment will be profitable.

In order to throw some light on this subject I have prepared the following figures :

ESTIMATE.

In the township of Malahide there are 150 miles of roads. Gravel is plentiful, and first-class gravel roads should be constructed for $1,000 a mile, or a total of $150,000. Last year there was expended about $5,000 in cash and 4,853 days' statute labor. Their by-law to commute fixes the rate at one dollar per day. This would amount to $4,353 or a total of $9,353. The equal annual payment to meet the expenditure in interest in forty years at four per cent. would be $8,233.10. So that if the statute labor were commuted first-class roads could be built throughout the whole township, the payments would be made without increasing the taxes, and have $1,619.90 with which to maintain the roads.

From statistics which I have gathered I find that the total expenditure last year in the Province—exclusive of new districts—in cash for road purposes was $750,229. In addition to this the value of the statute labor which was required from the farmer, commuted at $1 a day, was $966,658, or a total annual outlay of $1,716,882, and this expenditure goes on from year to year increasing rather than decreasing, and each year finds the work but little in advance.

In twenty years, at the present rate, $15,004,530 will have been expended ; but, as I have said, this rate increases annually, and it will be fair to place this amount at $20,000,000. From practical experience I find that where gravel can be obtained within an average haul of three or four miles, first-class gravel roads can be built for $1,000 per mile. Where macadam has to be freighted a distance of fifty miles first-class macadam roads can be built for $2,000 per mile. There are 50,000 miles of road in the Province. One half of these roads (25,000 miles) could be built of gravel and the remainder of macadam. The account would then stand as follows:

25,000 miles of gravel roads at $1,000	$25,000,000
25,000 miles of macadam roads at $2,000	50,000,000
Total	$75,000,000

The assessed value of farm lands in the Province, exclusive of new districts, is $413,596,556; estimated actual value, $551,462,075.

With first-class roads the value of land will be increased ten per cent., or $55,146,207. This, with the $20,000,000 which will be expended at the present rate, equals $75,146,207, or more than the cost of the work, and we would have the present statute labor or its equivalent with which to maintain them.

Surely a consideration of these ideas and facts should lead to the determination on the part of every township to press this question into definite shape. I have not mentioned the relief which would be given to the people by the expenditure of so large a sum as would be necessary to execute the work in the shape of payments for labor and materials, which in the majority of cases would be earned exclusively by the farmers. This would stimulate trade, and would bring contentment and happiness to the people. It would be an outlay reproductive in its results, and directly and indirectly lead to permanent advancement and contentment of the farmer, while at the same time doing justice to every other class.

The expenditure of nearly four millions of dollars annually for labor and materials throughout the rural districts would give years of prosperity to the whole Province, while by the wise use of the means available within the span of one short life, almost without effort, the whole work would be paid for and the debt cancelled and the noble heritage of good roads left to our children's children for ever.

The question is one of vast interest—one of the most important of those affecting the welfare of the nation—and instead of pursuing a haphazard, insufficient, and often densely ignorant method without design or apparent purpose, let us treat it intelligently and adopt the best working methods and specifications for advancing it. Road building is an art which the ancients were masters of, and constructed highways which have lasted for centuries, and our country, ambitious to be thought the highest exponent of civilization, should not be content with roads which are a burlesque on the name.

A vote of thanks was tendered Mr. Campbell for his excellent paper.

Mr. Beam, on behalf of the Good Roads Association, invited the members of the Institute to the meeting of that body to be held that afternoon and the next day in the Y. M. C. A. building.

In accordance with the resolution passed on the previous afternoon, the report of the Committee on New Business was then taken up, Mr. Raynor, the chairman of the committee, again reading the report.

Moved by Mr. Raynor, and seconded, that the first clause of the report be adopted. Carried.

Moved by Mr. Raynor, and seconded, that the second clause be adopted.

Mr. Monteith: As the mover of that resolution I might draw your attention to my object. We have found that the greatest difficulty we have to meet is the financial difficulty; and as to this matter of sending two delegates down here, for all we do, I think it could be easily put upon one delegate. The motion is to that effect.

Mr. Awrey: I move that that part of the committee's report be not adopted, and that the number, instead of being limited to one, remain as it is now at two.

The Chairman: I rule that out of order. The question is merely the adoption of that clause of the committee's report in which they recommend that it be brought before this meeting for consideration.

On a vote being taken the motion to adopt the second clause of the report was lost.

Moved by Mr. RAYNOR, and seconded, that the third clause of the report be adopted. Carried.

Moved by Mr. RAYNOR, and seconded, that the fourth clause of the report be adopted. Carried.

Mr. RAYNOR: Since the committee met there has been placed in my hands this resolution:

"Be it resolved that this Institute do heartily approve of the platform laid down by the Deep Water Ways Association, and that we appoint delegates to represent this Institute at the convention of the International Association to be held at Cleveland; that this Institute would respectfully memorialize the Government of the Province of Ontario asking that a sum of money be appropriated for the purpose of rendering effective assistance in furthering the aims of the said Association."

As I have not consulted with the other members of the committee in regard to it I am not prepared to move its adoption, and you may do with it as you see fit.

Mr. G. A. AYLESWORTH: I think the resolution passed last night sufficiently deals with that matter. It was by that resolution referred to the executive committee.

Moved by Mr. J. F. BEAM, seconded by Mr. T. A. GOOD, "That this Institute extends to all ex-presidents the same rights and privileges as delegates enjoy." Carried.

On the motion of Mr. D. McCRAE, the new president, Mr. T. G. Raynor, then took the chair.

Mr. RAYNOR: With regard to the work of the Institute in future, we cannot speak altogether definitely, but for the honor you have conferred upon me I take this opportunity of thanking you most heartily. It is not because I have merited it as being a superior chairman to the one we have just had, for you will all agree with me that he filled the position most efficiently, but it is, I think, that you desire the honor to be passed around, and it came my turn, and I assure you that if spared to occupy this position another year I will step down and let a more efficient man fill the position. We have now come to the time when we wish to close. In justice to those gentlemen who introduced the question of deep waterways, if you would be patient and allow me to introduce one of them to make a few remarks on it before we close I would be glad, but if not we are open to a motion for adjournment.

A MEMBER: Before putting a motion for adjournment I wish to move a vote of thanks to our retiring president. It is a duty we owe to him. I hear everybody say that this is one of the best meetings that the Central Farmers' Institute has ever held, and in a measure it is due to the way in which the chairman carried on the business.

The motion was seconded and carried by a standing vote.

Mr. McEWING: I certainly most sincerely thank you for the vote of thanks. My term of office in many ways has been a most pleasant one. I must say I have received the greatest consideration from the delegates gathered here in convention. I have had little or no trouble in getting them to maintain good order and speak very closely to the subjects in hand. I may also at the present time extend my sincere thanks to the members of the executive board who so ably assisted me in carrying on the work of the Institute, but more particularly do I extend those thanks to your most able and efficient secretary, Mr. Pettit. His experience in connection with the Institute work, and his good executive ability, are almost invaluable to the success of this Institute. I thank you again, gentlemen, for your kind expression of opinion.

Moved and seconded that Mr. HOWLAND be now heard.

Moved in amendment, and seconded, that we do now adjourn.

The motion for adjournment was carried, and the meeting accordingly closed.

LIST OF DELEGATES TO CENTRAL INSTITUTE.

Institute Delegate.	Post office address.
ADDINGTON :	
J. B. Aylesworth	Newburgh.
Wm. Whelan	Centreville.
BRANT, S. :	
Joseph D. Eddy	Scotland.
W. S. Campbell	Brantford.
BROCKVILLE :	
Thomas Keer	Greenbush.
C. H. McNish	Brockville.
Robt. J. Jelly	Jellyby.
BRUCE, C.:	
Wm. Bowes	Pinkerton.
Wm. McBride	Paisley.
BRUCE, N.:	
Patrick Cummings	Port Elgin.
BRUCE, S.:	
Wm. Little	Walkerton.
Peter H. McKenzie	Lucknow.
CARLETON :	
Edward Kidd	North Gower.
CORNWALL :	
R. K. Milroy	Cornwall.
DUFFERIN :	
Thomas C. Ferguson	Horning's Mills.
J. H. Rosevear	Shelburne.
DUNDAS :	
Matthew Carlyle	Dunbar.
F. E. Falinger	Morrisburg.
DURHAM, W. :	
Wm. Werry	Solina.
H. C. Hoar	Bowmanville.
ELGIN, E.:	
Thomas Roberts	Sparta.
J. C. Dance	Kingsmill.
ELGIN, W.:	
Duncan R. Thompson	Cowal.
Arch. McColl	Aldboro'.
ESSEX, N.:	
John Holden	Windsor.
ESSEX, S.:	
W. G. Baldwin	Colchester.
FRONTENAC:	
Hugh Rankin	Collin's Bay.
GRENVILLE, S.:	
James Bennett	Spencerville.
Robert Alder	Prescott.
GREY, C.:	
John Boland	Vandeleur.
D. W. Clinton	Maxwell.
GREY, N.:	
James Smith	Owen Sound.
George McDonald	Kilsyth.
GREY, S.:	
Alex. Taylor	Dromore.
Wm. Irvine	Lamlash.
HALDIMAND :	
Michael Toohey	Cayuga.
P. E. Reichilds	Fisherville.
HALTON :	
A. W. Peart	Burlington.
W. B. Robbins	Nelson.
HASTINGS, E.:	
J. C. Hanley	Read.
John Stokes	Thomasburg.
HASTINGS, N.:	
J. G. Foster	Moira.
HASTINGS, W.:	
B. Mallory	Frankford.
HURON, E.:	
John C. Morrison	Winthrop.
Thomas McMillan	Seaforth.
HURON, S.:	
John Ketchen	Brucefield.
Robert Gardiner, jr	Farquhar.
HURON, W.:	
Wm. Bailie	Nile.
W. P. Grierson	Wingham.
KENT, E.:	
J. Brown	Kent Bridge.
A. J. C. Shaw	Thamesville.
KENT, W.:	
J. R. Longmore	Chatham.
John Clarkson	Chatham.
LAMBTON, E.:	
John Dallas	Thedford.
LANARK, N.:	
John Forsyth	Cedar Hill.
LANARK, S.:	
William Watson	Perth.
George Oliver	Perth.
LEEDS AND GRENVILLE :	
David Woods	Bishop's Mills.
LEEDS, S.:	
Edwin R. Bradley	Lansdowne.
Hugh N. Stinson	Toledo.
LENNOX :	
Henry Filson	Stella.
M. C. Bogart	Napanee.
LINCOLN :	
A. H. Pettit, Secretary	Grimsby.
Jesse Pawling	Port Dalhousie.
Roland W. Gregory	St. Catharines.
MIDDLESEX, E.:	
Thomas Baty	Wilton Grove.
J. D. Thompson	Derwent.
MIDDLESEX, N.:	
C. M. Simmons	Ivan.
Peter Stewart	Parkhill.
MIDDLESEX, W.:	
Geo. B. Campbell	Appin.
John P. Grigg	Mt. Brydges.
MONCK :	
J. E. Crow	Ridgeville.
J. V. Thompson	Wellandport.
MUSKOKA :	
W. H. Taylor	Alport.
NORFOLK, S.:	
N. S. Palmerston	Walsh.
NORFOLK, N.:	
L. L. Sovereign	Waterford.
Dent Dalton	Delhi.
NORTHUMBERLAND, E.:	
Richard Honey	Brickley.
A. L. Boyce	Dartford.
NORTHUMBERLAND, W.:	
R. Cullis	Camborne.
John T. Mulholand	Baltimore.

LIST OF DELEGATES.—*Continued.*

Institute Delegate.	Post office address.
ONTARIO, N.:	
John Veal	Beaverton.
Thomas Feasby	Uxbridge.
ONTARIO, S.:	
Elmer Lick	Oshawa.
G. E. Mowbray	Oshawa.
OXFORD, N.:	
R. W. Parker	Braemar.
William Munro	Braemar.
OXFORD, S.:	
Valentine Ficht	Oriel.
PEEL:	
D. H. Marshall	Edmonton.
J. T. Peacock	Humber.
PERTH, N.:	
John A Turnbull	Atwood.
William Keith	Listowel.
PERTH, S.:	
Nelson Monteith	Fairview.
William Ballantyne	Stratford.
PETERBOROUGH, E.:	
Francis Birdsall	Birdsall.
Edward Hawthorne	Warsaw.
PETERBOROUGH, W.:	
J. F. Davidson	Peterborough.
H. C. Garbutt	Lakefield.
PRESCOTT:	
Ralph LeRoy	Hawkesbury.
William McAdam	Vankleek Hill.
PRINCE EDWARD:	
L. P. Hubbs	Hillier.
A. S. Yarwood	Picton.
T. G. Raynor	Rose Hall.
RENFREW, N.:	
Henry Jameson	Pembroke.
John Brown	Beachburg.
RENFREW, S.:	
F. Kosmack	Northcote.
RUSSELL:	
W. R. Craig	Russell.
Albert Helmer	Russell.
SIMCOE, C.:	
Chas. Rankin	Wyebridge.
Jno. Anderson	Crossland.
SIMCOE, E:	
Alexander Trimble	Hampshire.
W. C. Wilson	East Oro.
SIMCOE, S.:	
Edward Jeffs	Bond Head.
SIMCOE, S.:	
Rev. J. Carswell	Bond Head.
Hon. Charles Drury	Crown Hill.
SIMCOE, W.:	
W. A. Furlong	Nottawa.
Charles Lawrence	Collingwood.
STORMONT:	
D. H. McLean	South Finch.
VICTORIA, E.:	
W. H. Stevenson	Fenelon Falls.
Morgan Johns	Bobcaygeon.
VICTORIA, W.:	
John Connolly	Lindsay.
Donald Jackson	Woodville.
WATERLOO, S.:	
J. F. Master	New Dundee.
Andrew Elliott	Galt.
WELLAND:	
Silas Zavitz	Ridgeway.
W. H. Gainer	Welland.
J. F. Beam	Black Creek.
WELLINGTON, C.:	
William Fairweather	Alma.
George Wright	Elora.
WELLINGTON, E.:	
George Cushing	Kenilworth.
John McNab	Arthur.
WELLINGTON, S.:	
P. Mahon	Aberfoyle.
George B. Hood	Guelph.
WELLINGTON, W.:	
Henry O. Gilree	Bosworth.
W. T. Hambly	Drayton.
WENTWORTH, N.:	
Joseph Stephenson	Freelton.
John B. P. Robertson	Strabane.
WENTWORTH, S.:	
W. M. Orr	Fruitland.
Thomas Macklem	Hamilton.
YORK, E.:	
William J. Haycroft	Agincourt.
Simpson Rennie	Milliken.
YORK, N.:	
B. F. Irwin	Sharon.
R. W. Phillips	Newmarket.
YORK, W.:	
William C. Grubb	Thistletown.
John Goulding	Downsview.

Other Association's Delegate.	Post office address.
Agriculture and Arts:	
Jas. Rowand, M.P.	Dumblane.
Ayrshire Breeders:	
Joseph Yuill	Carleton Place.
Clydesdale:	
David McCrae	Guelph.
Fruit Growers:	
Murray Pettit	Winona.
Eastern Dairymen:	
Henry Wade	Toronto.
Creameries' Association:	
W. G. Walton	Hamilton.
Shorthorn Breeders:	
W. G. Pettit	Freeman.

FIRST REPORT

OF THE

SUPERINTENDENT OF FARMERS' INSTITUTES

OF ONTARIO.

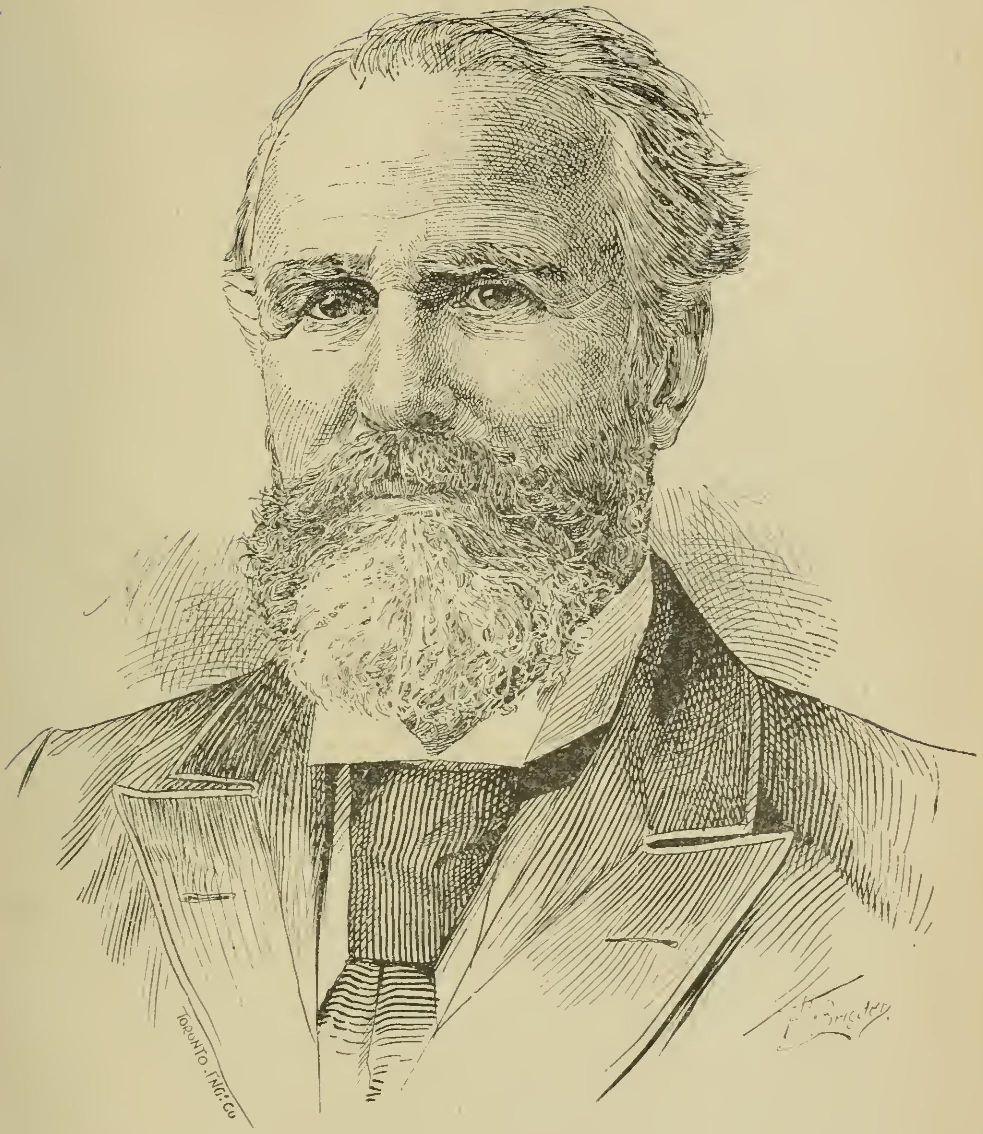
To the Honorable the Minister of Agriculture:

I have the honor to submit herewith my First Report as Superintendent of Farmers' Institutes.

Your obedient servant,

F. W. HODSON,
Superintendent.

GUELPH, June 29, 1895.



JAMES MILLS, M.A., LL.D.

FIRST REPORT

OF THE

SUPERINTENDENT OF FARMERS' INSTITUTES.

JAMES MILLS, M. A., LL.D.,

PRESIDENT OF THE ONTARIO AGRICULTURAL COLLEGE, GUELPH, ONTARIO.

It is with no little pleasure that in this my first report as Superintendent of Farmers' Institutes in Ontario, I present the portrait of President Mills, of the Agricultural College, Guelph. To the farmers and educationalists of this Province he has been widely and favorably known for many years, as one who has done and is doing work faithfully and well. During the past decade he has risen rapidly and surely in the esteem of all classes and rightly so, for a more able, earnest, honorable and industrious man does not serve the people in Canada. Even though so well known, it may be interesting to the older farmers, and stimulating to the younger, to refer briefly to his career.

James Mills was born of North of Ireland parents, in the County of Simcoe, Ontario, in the year 1840. There, until he reached twenty-one years of age, he received a most thorough training in all the practical details of Canadian farm work, as the farm upon which he was brought up, and upon which he worked, was one of the best managed and best cultivated of the Province. So far his life had been intensely practical. A serious accident formed the turning point in his career. At twenty-one he lost his right arm in a threshing machine, and, thus handicapped, he stood upon the threshold of his life work with responsibility, and what some would call disaster, staring him in the face. He then entered the public school and began his education at the time when the majority of young men have already finished Hitherto his training had been manual or physical; now he began to develop the mental side of his nature. From the public school to Bradford Grammar school, and thence to Victoria College, Cobourg, he was led in his studies. From Victoria College he graduated as Bachelor of Arts in 1868, taking the gold medal for the year for the highest rank in general proficiency. Thus closed the second period of his life, and seven years of study and preliminary training. After graduation, he taught for a while in the Cobourg Collegiate Institute, from which position he was promoted to the headmastership of the Brantford High School. This institution was then in rank a third or fourth rate school; under Mr. Mills it soon became a collegiate institute, and began to attract attention as one of the most successful for training young men and young women for general work, for teachers, and for University examinations. The growth of this school and its reputation for thoroughness and good discipline, suggested a man for the Agricultural College when the presidency became vacant. The offer came to Mr. Mills from the Government entirely unsolicited, and was accepted in the summer of 1879, when began the fourth period of his life, the work in which he is still engaged. The Ontario Agricultural College had been established in 1874, and for many years had many and great difficulties to contend with. We sometimes hear a great deal about the agricultural colleges of the United States, but they have been forced, in order to maintain an existence, to enlarge the scope of their work by including technical, teachers' and even commercial courses. In many of these colleges the agricultural course has been the least successful. The attempt, therefore, to maintain an Agricultural College on its own merits in this Province has presented peculiar difficulties, and the success achieved is much to the credit of the various officials who have from time to time guided its course. When Mr. Mills became president, the College was still working up hill, fighting its way with little encouragement, and with much opposition. For the past sixteen years he has devoted his unstinted energies to the work. The College is a large institution, and has presented extraordinary problems to solve. It has had a hard struggle to gain the recognition and approval of the very class for which it was established. It has all the perplexities attendant upon a large boarding school. It has had to overcome the prejudice aroused by having had, in its earlier days, a number of students who were not agricultural in their up-bringing or their inclination. The students are now coming from the best farms of this Province, and the institution is becoming more and more every year an Agricultural College for Ontario.

Since President Mills assumed office, there have been great improvements in the buildings and equipment. Large farm barns have been twice erected, a fully equipped dairy establishment added, chemical and mechanical laboratories and gymnasium constructed, the main buildings of the College completely overhauled and improved, and such changes accomplished that it is virtually a new institution.

The work of the College has been greatly enlarged during President Mills' regime, by the addition of a third year's course and affiliation with Toronto University, whereby the degree of Bachelor of Science in Agriculture is conferred upon its students. Travelling dairies have been instituted by the Minister of Agriculture, and the work performed by the dairy department of the College. In this work President Mills has taken a very active part, and the labors of his office were thereby greatly increased. The high esteem in which President Mills is held by the farmers of Ontario, and the very high regard in which he is held by the leading agriculturists of the United States, prove that his work has been most successful. Personally President Mills has the best wishes of all ; he is known as a man of energy and thoroughness. He has shown the greatest courtesy to the many thousand farmers with whom his work brings him in contact at Guelph and elsewhere ; he has kept himself free from party politics and is as acceptable to Conservatives as to Reformers. His administration of affairs is clear and above reproach. He has never been known to seek praise or publicity, to sound his own praises or encourage others to sound them for him, to gain any notoriety by pulling or tickling the ear of the public. He has simply done his duty, and that not always a pleasant or popular one, and has allowed himself to be judged by the public on the merits of work done. His work speaks for him, and the agriculturists and others of this Province know that the Ontario Agricultural College embodies the life work of President Mills and the many energetic workers by whom he has surrounded himself during the past sixteen years.

THE FARMERS' INSTITUTES

were also developed by Dr. Mills. As I have recently been appointed superintendent of this department, this is a very appropriate time to take a retrospective view and notice how this organization came into existence in Ontario, and consider what it has accomplished during the past ten years, for no other organization has made its appearance, capable of doing so much to enable farmers to realize the dignity of their occupation and develop their talents and energies in the proper direction. It was during the year 1884 that Dr. Mills began to mature his plans for launching this organization of farmers throughout Ontario. His suggestions were adopted by the Hon. A. M. Ross, then Commissioner of Agriculture, and changes were made in the College vacations so as to enable the professors to take part at institutes during the three first weeks in January each year. This meant a shortening of the Easter and a lengthening of the Christmas vacation. For some time Dr. Mills had been impressed with the necessity of bringing the College and its work into closer communication with the farmers of the Province, but it was not until the end of 1884 that his scheme was fully prepared. At first it was decided to hold meetings at each place for one and a half days, usually commencing 1.30 p.m. of the first day, with an evening meeting that day, this meeting to have a somewhat varied programme, the speeches to be of such a character as to be interesting and instructive, not only to farmers, but also to citizens of the town or village where the institute was being held. The nature of this evening session has changed very little since the beginning, and has always been very popular. If many papers are read at evening meetings the tendency is to keep away villagers, and as many of the farmers do not care to drive a distance after dark, the session fails. The bringing together of these two elements, farmers and citizens, must have a very beneficial effect. On the second day, two full sessions were held, and the delegates usually left in the evening or following morning for the next institute. In the development of the institute, there has been a tendency to cut the meetings down to one day and try to hold two institutes in one county. Many who have taken part are inclined to favor Dr. Mills' original plan, because when people are interested, one day is far too short for the discussions likely to arise during the sessions in an advanced neighborhood. As soon as Dr. Mills announced his scheme, it was heartily received, and more applications were sent in for a delegation than he could comply with. However, he arranged his first tour, which began on January 2nd, 1885, and the following twelve places have the honor of being the first farmers' institutes held in the Province of Ontario : Smithville, Welland, the place where President Mills and Prof. Panton held their first institute; Kingsville, Essex ; Wyoming, Lambton ; Coldstream, Middlesex ; Woodstock, Oxford ; Clinton, Huron ; Hamilton, Wentworth ; New Lowell, Simcoe ; Meaford, Grey ; Pickering, Ontario ; Oshawa, Ontario ; Kingston, Frontenac. It was with some doubts that he began the work, for owing to the scheme being adopted by the local government in power, there was a certain amount of political prejudice in the air, and there was also an idea prevailing among farmers, that the professors were simply "book men." However, it was not long before the last impressions were effaced. The able adresses of Dr. Mills soon showed that what he said was the utterance of one who knew whereof he spoke, and that the President of the Agricultural College had himself worked upon a farm until he had reached manhood. As the years have rolled on, very little of the political prejudice has shown itself, and to-day we find Conservatives and Reformers vieing with each other in making the farmers' institutes a success, proud of the organization and of the Agricultural College from which it emanated. When the tour of 1885 closed, and the professors met to compare notes, it was gratifying to the originator and promoter of the scheme to learn his purpose would in the near future be productive of rich results. During January of 1886, 26 institutes were held. In 1887, 40 institutes were visited and Dr. Mills found it necessary to engage the assistance of others than those upon the staff. Messrs. John McMillan, M.P., and Mr. John I. Hobson, joined the work for that year. In 1888, the cry for help increased and Dr. Mills found it necessary to arrange for 60 institutes. The work now began to assume considerable magnitude, and one can readily imagine that it caused much anxiety and worry to arrange for these meetings. It became necessary now to secure the aid of several leading farmers, among whom will be remembered such men as Messrs. Hobson, McMillan, Jeffs, S. Rennie, and the Hon. John Dryden who at that time was not a Minister of the Crown. In 1890 we find the work mapped out into 7 divisions embracing 75 institutes, and to each three delegates were sent—a professor, a leading farmer and a leading fruit grower. This was a decided step in advance, and enabled the delegates to completely clear up any difficulties which might arise. Science tells why and practice answering how the operations are carried on upon the farm and in the orchard. In 1891, we find that 95 institutes, forming eight divisions, were arranged for the annual tour. The Province was now well covered, and great improvement was reached in the papers read, lectures delivered and discussions carried on. It is not necessary any longer to show the importance of being a member of an institute. Members are found without a special harangue, and the farmers' institutes have become a powerful educating medium throughout the Province. In 1892, we find nine divisions formed and 112 institutes visited. In 1893, nine divisions and 119 institutes, and 1894, eleven divisions with 133 institutes. Having assumed such a magnitude, it is not a matter of surprise that Dr. Mills was compelled to call a halt; a stage was now reached when it was deemed wise that one person should be appointed to take charge of the institute work, and, as superintendent of farmers' institutes, be the recognized head of a work, which, under the wise direction of Dr. Mills, had grown to such large proportions. Consequently about the 1st of October, 1894, I was busily engaged mapping out the work for 1895, which embraced twelve divisions and 170 regular institutes, besides a large number of supplementary institutes.

It may be well to note here some of the lines along which great advance has been made during the ten years this educating force has been in action :

(1) We find now, more than ever, a great desire among our farmers to know more of the teaching of science, as it bears on agriculture. They find science and practice go hand-in-hand where progress is made. The teacher of science is listened to with rapt attention as he unfolds some of the scientific principles that underlie the operations upon the farm.

(2) We find a greater readiness to discuss agricultural problems. In the early days of the institute it took great skill on the part of the delegates to get farmers to take part in the discussion. To-day, as soon as an address is over, many are ready with questions to draw out all that can be learned from the speaker. So marked is this, that discussions have frequently to be cut short for the want of time.

(3) A wonderful increase in the membership.

(4) Farmers are more alive than ever to the necessity of being educated, especially along the lines of agricultural science.

(5) While the professors have done much to simplify and make attractive the teachings of science, they have learned a great deal from the practical farmers at these meetings.

(6) The institutes have developed readiness to speak and ability to express the results obtained from practice in farming.

(7) A higher ideal of farm life has been attained, and a halo of interest has been shown to surround it, which can only be seen when men read, observe, and study the teachings of science, as the great book of nature spread open before them constantly reveals such.

Of those who commenced this work, only one delegate has been at every series of institutes, viz., Prof. Panton, whose clearness of expression and simplicity of language in trying to make attractive the teachings of science will be remembered by the many institutes he has addressed in his eleven tours through the Province.

This sketch and portrait will surprise no one so much as the President himself, as everything has been procured and prepared without his knowledge. In private life, as well as in public, he is warm-hearted and kindly and generous, and he has the courage of his convictions. The latest honor conferred on President Mills was the granting of LL.D. (Doctor of Laws) by his *alma mater* in May, 1892. May Dr. James Mills still be spared to do good work for the farmers of Ontario.

THE ACT AND RULES GOVERNING FARMERS' INSTITUTES IN THE PROVINCE OF ONTARIO.

In the construction of this Act and of the rules—

(1) "The Department" shall mean the Department of Agriculture of the Province of Ontario.

(2) "The Minister" shall mean the Minister of Agriculture of the Province of Ontario.

(3) "The Superintendent" shall mean the Superintendent of Farmers' Institutes for the Province of Ontario.

(4) "District" shall mean a district composed of municipalities as set forth in Schedule "B" of the Agriculture and Arts Act, 1895.

(5) "Regular meetings" are those at which delegates sent by the superintendent are present, and whose expenses, etc., are paid by the Department.

(6) "Supplementary meetings" are those conducted by the local officers.

(7) "Regular delegates" are those sent annually to assist local officers to hold regular meetings. (See clause 5).

(8) "Supplementary speakers" are those sent at the request of local officers to assist said officers when holding supplementary meetings.

FARMERS' INSTITUTES ACT.

1. The formation of farmers' institutes, for the purpose of disseminating information in regard to agriculture, shall be permitted under this Act, one for each district, as given in Schedule "B" to this Act, but the Lieutenant-Governor in Council may, upon the recommendation of the Minister, authorize the organization of additional farmers' institutes or make changes in the limits of the various districts, so far as farmers' institutes are concerned, in order to increase their efficiency.

2 The Lieutenant-Governor in Council may, upon recommendation of the Minister, adopt rules or regulations for the general guidance or direction of such farmers' institutes.

3. Every farmers' institute shall be entitled to receive such money out of the unappropriated funds in the hands of the Provincial Treasurer as the Legislature may grant, provided—

(*a*) That the number of members is at least fifty, each paying an annual fee of not less than 25 cents.

(*b*) That the rules or regulations approved by the Lieutenant-Governor in Council have been carefully observed.

(*c*) That all reports or returns required to be made to the Department have been made to the satisfaction of the Minister.

REGULATIONS AND INSTRUCTIONS.

To the Officers and Members of Farmers' Institutes :

The Ontario Legislature has voted an appropriation of $2,200 for farmers' institutes for a grant of $25 to one institute in each district, on condition that an equal sum be granted by the county council or the municipalities in which the institute is organized, and on such further conditions as may be imposed by regulations of the Minister of Agriculture.

The object of each local institute shall be the dissemination of agricultural knowledge in its district and the development of local talent. The officers shall endeavor to bring the rank and file of the farmers into touch with the most successful local men, that the masses may become more conversant with the best and most profitable methods of farming, stock raising, dairying, fruit culture, and all branches of business connected with the industry of agriculture.

Organization of Institutes.

1. One institute may be organized in each district of the Province, exclusive of cities, or in such other divisions as the Lieutenant-Governor in Council may authorize.

2. The organization meeting may be called by the superintendent of farmers' institutes, by the head of a municipality or by any five farmers of the district; and at least two weeks' previous notice shall be given by advertisement in two newspapers published in the district, or by placard, in which shall be stated the object, time and place of meeting.

3. As soon as organization is completed, the Superintendent shall be notified, and the names and addresses of the officers and directors shall be forwarded to him by registered letter.

4. All memberships shall terminate the second Tuesday in June of each year.

5. Each institute shall be known by a distinctive name.

Officers.

6. The officers shall consist of a president, a vice president, and a secretary-treasurer, and two or more directors from each municipality included in the institute district. Said officers shall be elected annually, and together shall constitute a board of directors, the majority of whom shall be practical farmers.

7. There shall be an executive committee composed of the president, the vice-president, and the secretary-treasurer.

8. There shall be elected annually two auditors, to audit the accounts of the institute.

9. If the secretary resigns, or for any cause cannot perform the duties of his office, or if he remove from the district, the president shall immediately issue a letter calling the officers and directors together, giving each at least two weeks' notice. In the meantime the president shall perform the secretary's duties. At the time and place appointed, the officers and directors present shall appoint a secretary. In case the presidency is vacant, or the president does not take action within ten days, the vice-president shall assume the power of president.

10. Any change in the personnel of the executive or directorate, shall be reported to the Superintendent forthwith.

Annual Meeting.

11. The institute year shall begin July 1st and end June 30th. The annual meeting shall be held on the second Tuesday in June, at one o'clock p.m. of each and every year. At this meeting the aforenamed officers, directors, and auditors shall be elected for the ensuing year. The first of said annual meetings shall be held June, 1896. Officers and directors now in office shall continue until aforesaid date.

12. The method of election of officers shall be by ballot. No person shall be eligible for office, or be entitled to vote at the annual or any other meeting, who has not paid his fees in full for the current or ensuing year.

13. At the annual meeting it shall be decided at what points in the district meetings of the institute shall be held during the year, first as to regular, and second as to supplementary meetings.

14. At the annual meeting, the executive officers for the current year shall, through the secretary, present to the meeting in writing, a carefully prepared report of the proceedings of the current year, in which shall be stated, the number of institute meetings held since last annual report, the aggregate attendance at each, the total number of papers read and addresses delivered, the number of meetings attended by each officer and director, etc. The treasurer shall present his report for the current year. Said report shall first be audited and certified thereto by the auditors.

15. The annual meeting shall be devoted solely to the business of the institute, as specified in clauses 11, 12, 13 and 14, and in considering ways and means whereby the institute can be improved.

16. The annual meeting shall be advertised by mailing to each member, at least fourteen days before the second Tuesday in June, an announcement calling the members together. Said announcement shall specify the date, place and hour of meeting, and shall contain a programme of the said meeting. If the executive deem it in the interest of the institute, posters and newspaper advertising may also be employed to make this meeting public.

Programme for Annual Meeting Held Second Tuesday of June of Each Year.

(1) President's report.

(2) Debate thereon.

(3) Report of the executive presented in writing by the secretary.

(4) Treasurer's Report presented in writing.

(5) Auditors' Report presented in writing.

(6) Selection of places at which to hold regular meetings.

(7) Selection of places at which to hold supplementary meetings.

(8) Election of president, election of vice-president, election of a secretary-treasurer, election of two directors for each township in the institute district, election of auditors.

(9) Suggestions as to how the institute can be improved or made more useful, if this has not already been considered by the president in his opening address and discussed in the debate following.

Other General Meetings.

17. Each institute shall hold at least five meetings each year, in different places in the district. At these meetings, except in the case of the annual meeting, papers shall be read or addresses delivered on topics relating to agriculture, horticulture, dairying or kindred subjects. Free discussion shall be encouraged.

18. All institutes organized under the Act shall be strictly non-partizan and non-sectarian in every phase of their work, and no institute shall be operated in the direct interest of any party, sect or society, but for the equal good of all citizens and the farming community.

19. No subject shall be presented at an institute meeting or discussion allowed, of a political or sectarian nature ; nor shall any speaker be allowed in his lecture, essay, or speech, or in any discussion to advertise wares or schemes in which he has a direct or indirect pecuniary interest. The delegates and officers of the institute shall see that the exercises are not subordinated to any low or frivolous entertainments or to the aggrandizement of any individual, party, or sect.

20 The regular delegation shall visit two points only in one year in each institute district, or when said delegation spends two days at one place, that point only shall be visited. The government will defray the cost of sending these delegates, but officers and members of institutes are expected to lighten as far as possible the expenses of delegates while in their district.

21. Should an institute require a speaker or speakers at any other period during the year, to assist in holding supplementary meetings, application for assistance shall be made to the Superintendent. The Department will pay for the services of such supplementary speaker or speakers, but the institute requesting the services of same shall pay his or their travelling expenses when in said district, also during time required to reach said district and to return therefrom. All requests for assistance to hold agricultural, horticultural, live stock, or dairy meetings, shall, when possible, be made through the secretary of the district institute. Applicants shall state what subjects they wish the speaker to discuss.

22. The Superintendent shall have power to increase the number of regular meetings held in any district, and also to change the terms on which supplementary speakers are sent out.

23. Every meeting of an institute, except the annual meeting, shall be advertised by issuing posters, not less in size than 15x20 inches, on which shall be printed an attractive programme of the meeting, giving date and place of meeting, hour of opening, the name and address of the speakers, topics to be discussed by each, also the hour at which each speaker will address the meeting, the time to be occupied by each address, also the time allowed for discussion after each address, and such other information as the executive deems necessary. A copy of said bill shall be sent, at least two weeks previous to the date of meeting, to each postmaster, each schoolmaster, each miller, each blacksmith, and to other places of public resort in the district, with a request to post in a conspicuous place. It shall be the duty of the officers and directors to exercise diligence to ensure the proper posting of said bills. In addition thereto, a programme of convenient size, containing similar information, shall be distributed so as to reach its destination, at least

ten days previous to date of meeting. A copy of said programme shall be sent to each member of the institute, to farmers, journalists, public men and others residing in the district. Such posters and programmes shall announce that all interested are welcome, whether members of the institute or not. Copies of said programmes shall be sent to the school teachers in the district, with the request that they be carefully distributed among the children.

24 A copy of each poster and each programme shall be sent as soon as published to the Superintendent, and to each speaker advertised.

25. When institutes are notified of the dates assigned for their meetings, and are furnished with the names of the speakers and a list of topics, the Executive Committee shall proceed to complete arrangements according to these rules. They shall engage a hall, select the local talent, etc., etc. At least half the time of the institute shall be occupied by local talent. The hall or other building to be used for holding institute meetings, shall be lighted and heated, when such is necessary, at least half an hour before the time advertised. When light and heat are not required, said places shall be opened and prepared for holding the meeting, at least one half hour before the time advertised.

26. The time allowed speakers should be from five to thirty minutes, to vary according to the subject and the ability of the speaker. It is no breach of courtesy to limit each speaker to the time allotted him in the programme. When the programme has been carefully prepared on that basis, no speaker should be allowed to exceed the time, to the embarrassment or detriment of the speakers who are to follow him. Hold speakers down to their time, and the work of the institute, as a rule, will be benefited. Sessions should not be too long. Two hours and a half are long enough for any session. Two hours should be the limit of a night session.

27. No one shall be named on a programme who has not agreed to do the specific thing he is advertised to do.

28. At each meeting of the institute a committee shall be appointed to canvass the audience for members.

Board of Directors.

29. The board of directors, under these rules and regulations, shall have full control of the affairs of the institute. They shall arrange time and places of meetings when not otherwise arranged for, and shall outline the work and policy of the institute.

Executive Committee.

30. The executive shall carry into effect the plan of work decided upon by the board of directors, and shall arrange the details of the same.

31. A meeting of the directors or of the executive may be held at any time, provided one week's notice by letter be given to each director, if a directors' meeting is to be held; a similar notice shall be given to each executive officer in case of an executive meeting. Meetings of the executive officers or of the directors, may be held on shorter notice, provided each director or executive officer be otherwise notified and agrees thereto.

Duties of Officers.

President.—32. It shall be the duty of the president to preside at all meetings of the board of directors and of the executive committee. In the absence of the president, the vice-president shall preside; and if both are absent, a chairman shall be appointed by the committee.

Secretary.

33. The secretary shall have the powers of a managing director, acting under the control and with the approval of the executive.

34. It shall be the duty of the secretary to call meetings of the executive committee and board of directors, upon the authority of the president or any two officers or directors,

to give notice of all meetings as required by these rules, and to keep correct minutes of proceedings.

35. All official correspondence relating to the institute shall be conducted by the secretary or in the name of the secretary.

36. In all correspondence relating to the institute, the name of the institute shall be given in full after the signature of the officer, except in cases where an official heading is used, giving the name of the institute.

37. All reports and returns required by the Department of Agriculture or the Superintendent, shall be made upon forms specially provided and in the manner indicated.

38. He shall keep a book in which shall be entered the names and addresses of members in alphabetical order, also a book to be used as a mailing list, which shall contain the names of parties to whom posters, programs, etc., may be sent.

39. It shall be the duty of the secretary to prepare and submit to the executive, the annual report as set forth in clause 14, and to present the final report to the annual meeting.

40. Not later than the twentieth day of June of each and every year, he shall forward to the Superintendent by registered mail, a copy of said report, together with a copy of the treasurer's report, the name and address of each officer and director elected for the ensuing year, in duplicate, and the name and address of each member who has paid the subscription for the succeeding year.

41. On or before the fifteenth day of each succeeding month, the secretary shall send to the Superintendent the name and address of each additional person who has since the previous report become a member of the institute.

42. Within one week after the close of each institute meeting or series of meetings, the secretary shall forward to the Superintendent, by registered letter, a detailed report of said meeting or meetings, in which shall be stated the name of the place or places where sessions were held, the number of persons present at each session, the name and address of each person who read a paper or gave an address, the title of the address or paper, and a comment upon its value, whether good, fair or indifferent.

43. The secretary shall retain the manuscript of all papers read at meetings of the institute by local talent, in order that he may, when required, furnish the superintendent with the same. Each institute is required to forward at least two such papers each year, which may be published as the superintendent decides. Secretaries or essayists are not required to rewrite papers before sending them to the Superintendent; forward them as read at local meeting.

44. All reports, names, post office addresses, etc., shall be written in a plain, legible hand, or may be typewritten.

Treasurer.

45. It shall be the duty of the treasurer to collect all dues, to receive and account for all moneys belonging to the institute, and to disburse the same under the instructions of the executive, without whose order no money shall be paid out. He shall also prepare in detail and present to the annual meeting, a duly audited statement of receipts and expenditure.

46. He shall use such cash and receipt books, membership tickets, etc., as may be provided by the Superintendent.

Directors.

47. Each township in the district shall be divided annually between the directors representing the same, whose duty it shall be to make a thorough canvass for members each year. This division of territory shall be arranged at a directors' meeting, held immediately after the close of the annual meeting.

48. As soon as it is decided to hold an institute meeting in a township, the directors elected to represent that township shall form part of the executive committee, until after the close of said meetings. The duties of the said directors shall be to assist (to the best of their ability), the other members of the executive, to the end that a successful meeting may be held in their township.

49. It shall be the duty of the officers and directors to be present at the meetings of the institute. An officer or director who has not during the current year attended the meeting held in his township (except when prevented by sickness), or otherwise rendered valuable assistance to the institute, shall not be eligible for re-election to office for the ensuing year.

General Rules.

50. Every officer and director shall promptly answer all official communications addressed to him by the Superintendent, and shall make diligent efforts to furnish any information required of him relative to the affairs of the institute.

51. All money received, whether as members' fees, legislative grant, grant from the county councils or from municipalities, or otherwise, shall be spent within the district in which the institute operates; (1) To defray actual expenses of meetings such as are heretofore described; (2) To employ suitable persons to address said meetings; (3) To assist in circulating agricultural, horticultural, live stock and dairy literature or periodicals among the members, or to establish a circulating agricultural library for the use of members; (4) To remunerate the secretary and others for services rendered.

52. The funds of the institute as received by the treasurer shall, when possible, be deposited in a chartered bank or banking house.

53. At all meetings of an institute or of the officers, if duly advertised as set forth in these rules, ten members shall form a quorum to do business at an annual or other general meeting. At a directors' meeting, five shall be a quorum. At an executive meeting two shall be a quorum. If at any meeting a quorum is not present, those present shall adjourn, and the meeting shall again be called as prescribed by these rules.

54. The officers and directors shall act as far as practicable upon the recommendations of the superintendent, and shall submit to him through the secretary all questions relating to the welfare of the institute upon which advice may be required.

55. Each member of an institute shall be entitled to receive a copy of such publications as the following, issued by the Department of Agriculture for the Province of Ontario:

Report of the Ontario Agricultural College and Experimental Farm.
Report of the Ontario Agricultural and Experimental Union.
Report of the Dairymen's Association of Eastern Ontario.
Report of the Dairymen's Association of Western Ontario.
Report of the Ontario Creameries Association.
Report of Farmers' Institutes.
Reports of the Dominion Sheep and Swine Breeders' Associations.
Report of the Poultry Associations, East and West.
Report of the Good Roads Association, etc.
Bulletins of the Agricultural College and Experimental Farm.

Valuable matter is contained in these reports. Any change of address or any failure to receive the bulletins and reports issued by the Agricultural Department shall immediately be reported to the Superintendent. The names of all officers and directors shall be included in the list of members.

56. Blank forms for reports of meetings, financial statements, list of members, membership books, mailing books, etc., may be had from the Superintendent.

Order at Meetings.

57—(*a*) Except by permission of the presiding officer, no member or other person shall speak, except to ask a question, or to introduce or speak to a motion.

(*b*) In the discussion following the introduction of a subject, no person shall speak more than twice, nor for a longer time than five minutes, except by a vote of the meeting.

(*c*) When a question is under consideration no motions shall be in order, except the following: (1) To adjourn; (2) To postpone; (3) To amend. These motions taking precedence in the order named, and the first two shall be decided without debate.

(*d*) Before the vote is taken on any motion or amendment, the president shall ask, "Is the meeting ready for the question?" The question shall not be put so long as any member desires to speak and is in order. Any member desirous of asking a question on the subject introduced may do so verbally, but if he desires to ask more than two questions, he must submit them to the secretary in writing.

57. Every member is entitled to the following privileges:

(*a*) To protest against any decision of the institute, and request his objection to be recorded in the minutes.

(*b*) To protest against the decision of the chair and appeal to the meeting, stating the grounds of appeal, which shall then be put without debate in these words: "Shall the decision of the chair be sustained?"

58. A motion to re-consider any question decided by this institute shall be in order, providing such motion be not made on the same day on which the motion was made.

59. Order of business for general meetings other than the annual:

(1) Calling the meeting to order by the president.
(2) Reading and disposing of communications.
(3) Reports of committees.
(4) Programme of the day and discussion.
(5) Question drawer.
(6) Adjournment.

SUGGESTIONS TO INSTITUTE OFFICERS AND OTHERS.

Carefully study the Act and Rules governing institutes.

It is to your personal advantage to be a member of the farmers' institute, and to have every farmer in your township interested. The success or failure of your neighbor affects the value of your own farm and products. The interests of all farmers in any locality are inseparable.

Arrange all business engagements and your work at home so that you and your sons and families can attend the meetings. Be punctual and remain until the meeting adjourns.

Advertise the meetings thoroughly. Secure the assistance of the local press. Invite the reporters to your meetings and to your banquets, if you have any. Insert locals and use the mails and public schools. Talk of your institutes whenever you get a favorable opportunity. Interest the editors in the institute. Your best papers should be published, and if good points brought out in discussions are printed in the local papers it will add to the interest and value of the meeting. What you have published will help those who cannot attend your meetings, and may be of use to the few who are too lazy to improve their opportunities.

For officers, select men of energy and enthusiasm who are well known, reliable, and have made a success of their work. The president or secretary can make or break an institute.

For speakers, choose first the best men among yourselves who carry weight, and who have had an extensive experience. Do not think that only men from a distance or ready speakers can instruct you. Develop home talent. Be willing to learn from anyone. Information, not oratory, is desired at these meetings. Almost every man or woman who has had practical experience can write a valuable paper. Experience is the essential thing. The best papers give experience and the lessons which grow out of experience.

Do not imagine for a moment that college men know everything or that they think they do. Their business is to teach and to learn; your is to learn and to teach. The humblest man's experience should count for as much as anyone else's.

Draw out in discussion as many as possible of those present. Call upon them personally and insist upon their speaking. Frequently those best qualified are least inclined to do so. Try in each case to make the discussion interesting by engaging some experienced man to follow each address and thus open the discussion. Do not allow one or two to monopolize the discussion, but make all feel that they have a part in the proceedings.

Concise suggestive papers are far preferable to exhaustive treatises. As a rule, the discussions are more helpful than the papers or speeches on which they are based. Do not prolong the discussion to wearying lengths.

There is such a thing as having too many papers on practical subjects. It is well to have one or two popular lectures during the session of every institute. As a general rule, it may be said that popular lectures should be delivered at the evening sessions.

If you have a popular lecture at night, as a general thing, it is not well to have papers or discussions precede or follow it. Music at the beginning and close of the session will make the evening long enough. Do not cater too much to the popular desire to be amused. These institutes are for business first, then pleasure. Variety of subjects will save monotony, and a limited number of subjects will secure better attention.

From time to time secure the services of practical farmers from other counties, and also of men from the Agricultural College and elsewhere who have had special training in the sciences bearing upon agriculture.

In arranging for the evening meeting, it is a good plan to put on your committee, or in some way to associate with you, the mayor or reeve in the town or village in which the meeting is to be held. Do your utmost to interest the leading business men of the place, and encourage them to assist you. In that way you will be more likely to secure a good attendance from town and country, and have a rousing meeting, at which you should not fail to have a good programme of music with addresses from visiting speakers and leading local men.

Be sure and obtain the services of an efficient chairman for each session. A capable chairman adds greatly to the success of a meeting.

Allow the delegates full scope. The gentleman whose name appears first in each division is director of that delegation, and is expected wisely to direct and control the work of the deputation, and also the institute meetings to which he is sent.

I wish to impress on you the fact that the success of the institute system depends almost entirely on local workers. I will do what I can to make the institute system a success. My efforts will fail if I do not receive the hearty and enthusiastic support of the officers of each local institute; on them depends the success of their institute.

Take hold of this enterprise and help to carry it on with at least as much determination as the various professional and working classes in our towns and cities show in connection with their several organizations. Generally speaking, the institutes in this province are successfully conducted, but in a few cases the good work has been retarded by the apathy of the officers. Where officers are efficient and enthusiastic, and the advertising properly done, successful meetings are the result. Delegates sometimes complain that when the places of meeting are reached, the doors are found locked. In such cases the president and other officers frequently arrive long after the advertised time, or perhaps they absent themselves altogether. Such men are totally unfit for the positions they occupy and should not again be elected. The more thorough the preparatory work, the better the meeting will be.

The posters and programmes should be printed in the most attractive manner possible. Each institute should adopt and constantly use a certain color of paper, ink, and a certain typographical arrangement, which would soon become familiar to the people, and therefore recognized and noticed wherever seen. Red ink on white paper makes a bill noticeable, so also blue ink on red paper. The bill and the programme should each give the same information, and the typographical appearance should be the same, the only difference being in the size of the type and the size of the paper used.

The most desirable size for the poster is 27 inches long by 20 inches wide. The paper used for posters should be not lighter than 50 pounds to the ream, nor more than 70 pounds; the latter is the best weight. When tacked to a wall or pasted on boards, bills of this weight last much better than lighter ones. They are stiffer and hang better from a cord when put up in stores. Every institute meeting should be advertised by at least 100 of such bills.

Programmes should be printed on paper 50 pounds to the ream and may vary in size from 5x11 inches to 6x12 inches, according to the size of the sheet from which they are cut. Sheets of this size printed on one side only will be found cheaper and just as useful as smaller folders printed on both sides. From three to five hundred programmes should be used to advertise each institute meeting in addition to the larger posters.

Some institutes have found it profitable to put advertising on the back of programmes. Not less than one dollar per inch should be charged for advertising on back of programme when the edition numbers 500, *i.e*, a programme 10 inches long and 500 in number, should net the Institute $10 if sold to advertisers. If the number of programmes be more than 500 or less than 500, the price per inch should be proportionate. Never accept advertising from any but reliable parties, making or selling first-class goods or stock.

Many of the bills and programmes sent me by institute officers are good. In many respects a few are very undesirable in contents, in typographical arrangement and in shape. I have before me a bill 35 inches long by 12 inches wide, printed on 30-lb. paper. A more "sloppy," more unattractive sheet from a printer's standpoint, could not be produced; nor were the contents more attractive than the shape and the arrangement of type. The names of the speakers are given, but not a topic mentioned. Is it any wonder these meetings were poorly attended, or that this institute is weak and unpopular? There is nothing in this bill to draw or attract a busy, energetic man. The names of Zavitz, Smith and Beam will draw a crowd wherever they are well known, but these men were not known at these points, and, even had they been, the executive officers and printers did what they could to counterbalance their influence.

I have before me another bill well set up and well printed. In many respects it is an ideal. In size, it is 24 inches long and 20 inches wide; weight of paper, 70 pounds to the ream; color, blue; type, black. The objections are: (1) The election of officers should be held at a meeting devoted to business and not where delegates are present. (2) Instead of selecting certain subjects from the list of topics given for each speaker and setting the time when each address should be given, each speaker's entire list of topics is printed under his name. This course causes confusion. In this bill, Mr. Day is advertised to speak on "Summer and Winter Management of Dairy Cattle," and "Draining." Mr. Patton is advertised to speak on "Breeding, Feeding and Handling Dairy Cattle," and Mr. McNabb on "Underdraining." When speakers' topics are similar, one only should be chosen and advertised. So many topics are given on this bill that only a portion can be taken up in the time assigned. A farmer living many miles distant, may have read the bill and came to hear certain papers which perhaps are not read. No matter what else he heard, he would return home disappointed and perhaps never again attend a farmers' institute meeting.

The best arranged programme and poster I have received from Ontario was issued by the East York Farmers' Institute. In it the topics were chosen and the time for each address given and time allowed for discussion. Papers and addresses should not exceed from twenty to thirty minutes, and the discussion should occupy from ten to thirty minutes according to the importance of the subject in the district. On this programme, the time alloted to some of the topics and discussions thereon was too short. Too many papers were taken up at one session.

Accompanying this is a copy of a bill kindly forwarded me by Mr. George A. Smith, Director of Farmers' Institutes for New York State. There the question box is considered very important. Officers of Canadian Institutes are requested to develop this feature.

NEW YORK STATE AGRICULTURAL SOCIETY.

FARMERS' INSTITUTE AT SUSPENSION BRIDGE, N.Y.,

FEBRUARY 13 AND 14, 1895, AT COLT'S HALL.

Geo. A. Smith, Director.

WEDNESDAY, 10:30 A.M.

A Nurseryman's Novelties, ... E. Morden.
The Value of a Silo on a Grain Farm, . . . J. H. Brown, Holland Patent.

WEDNESDAY, 2 P.M.

Question Box.

Address of Welcome, ... Hon. T. V. Welch.
Response.
Commercial Fertilizers, how to use, . . F. E. Dawley, Fayetteville.

WEDNESDAY, 7 P.M.

Question Box.

Our Girls and Boys of To-day, ... Mrs. H. D. Maxon.
The Wife's Share, ... T. B. Terry, Hudson, Ohio.

THURSDAY, 10 A.M.

Question Box.

Manures for the Farm . . . . . F. Greiner, La Salle.
Treatment of Clover . . . . . T. B. Terry, Hudson, Ohio.

THURSDAY, 2 P.M.

Question Box.

Our Neighbor's Fruit Garden, or Progress of Fruit Culture in Canada, A. M. Smith, St. Catharines, Canada.
A Yankee Dairyman in Foreign Countries . . A. R. Eastman, Waterville.

A question box will be used at the opening of each session, and all are requested to contribute.

All are cordially invited to take part.

The presence of ladies is especially desired.

Headquarters, Bond's Hotel.

The Secretary of the Michigan State Board of Agriculture kindly forwarded me a programme, which is by far the best I have yet received and is also submitted herewith. Had it included a question drawer at each session, it would have been perfect. A very desirable feature is, that a person to open the discussion after each paper is here named. This should always be done.

FARMERS' INSTITUTE, UNION CHURCH, WASHINGTON,

UNDER THE AUSPICES OF THE

STATE BOARD OF AGRICULTURE AND THE WASHINGTON FARMERS' CLUB.

January 16, 17 and 18, 1895.

Good music. Everybody invited.

COMMITTEE.

O. E. Lockwood, President.	H. B. Cannon, Secretary.
I. S. Lawson.	H. P. Gladden.

WEDNESDAY MORNING, JAN. 16.

9:30.	Music.	
	Prayer.	
	Address of welcome, O. E. Lockwood,	Pres. Washington Farmers' Club.
	Response,	Hon. Chas. W. Garfield, Grand Rapids.
10:15.	Potatoes,	H. P. Gladden, Agricultural College.
	Discussion opened by	John Lessiter, Cole Station.
11:00.	Stock for the Farm,	G. W. Stewart, Grand Blanc.
	Discussion opened by	Prof. F. B. Mumford, Agricultural College.

WEDNESDAY AFTERNOON.

1:30.	Market Gardening,	W. W. Tracy, Detroit.
	Discussion opened by	J. W. Hibbard, Bennington.
2:30.	Weeds,	Prof. C. F. Wheeler, Agricultural College.
	Discussion opened by	Alfred Brotherton, Rochester.
3:30.	Farm Management in its relation to Injurious Insects,	A. B. Cordley, Pinckney.
	Discussion opened by	O. S. Bristol, Almont.

WEDNESDAY EVENING.

7:30.	Music.	
	Flowers in the Home,	Mrs. P. P. Andrews, Disco.
	Response,	Mrs. J. H. Holman, Rochester.
	Rural Observations in Europe,	Hon. Chas. W. Garfield.
	Music.	

THURSDAY MORNING, JAN. 17.

9:30.	Music.	
	Prayer.	
9:45.	Prospective Apple Growing in Michigan,	Hon. C. W. Garfield.
	Discussion opened by	O. F. Delano Oxford.
11:30.	Sheep Feeding,	Prof. F. B. Mumford.
	Discussion opened by	J. C. Potts, Davis.

THURSDAY AFTERNOON.

1:30.	Plant Diseases and their Treatment,	H. P. Gladden.
2:30.	The Future of Farming,	J. J. Snook, Rochester.
	Discussion opened by	S. B. Cannon, Washington.
3:30.	Smuts and Rusts of Cereals,	Prof. C. F. Wheeler.

THURSDAY EVENING.

7:30.	Music.	
	Our Country Schools,	Hon. H. R. Pattengill, Lansing. Commissioner S. B. Russell, Mt. Clemens.
	Discussion.	
	Music.	

FRIDAY MORNING, JAN. 18.

9:30.	Music.	
	Prayer.	
	The Commercial Peach Orchard	H. P. Gladden.
	Discussion opened by	Geo. Flumerfelt, Rochester.
10:45.	How to make and apply Insecticides,	A. B. Cordley.
	Discussion opened by	H. B. Cannon, Washington.

FRIDAY AFTERNOON.

1:30.	Starting in the Poultry Business,	H. S. Dunning, Agricultural College.
	Discussion opened by	Frank Wells, Rochester.
2:30.	The most profitable way to handle the Milk Product,	Chas. S. Bartlett, Pontiac.
	Discussion opened by	W. M. Chapman, Romeo.
3.30.	Making the Farm Home Attractive,	Hon. Chas. W. Garfield.
	Discussion opened by	J. S. Lawson, Disco.

FRIDAY EVENING.

7:30.	Music.	
	A Piece of Cloth and a Piece of Paper,	K. L. Butterfield, Editor *Grange Visitor*.
	Agricultural Education, illustrated by stereopticon views of the Agricultural College,	Pres. L. G. Gorton.

Basket picnic in church hall at noon of each day. Ladies of Farmers' Club will furnish tea and coffee.

Hereafter when sending speakers' names, address, and topics, I will indicate the time required to deliver each address and the length of time that should be devoted to discussion. The last period may be reduced if the officers deem prudent.

The following is an example of how speakers' names, etc., will hereafter be sent out:

C. A. Zavitz, B.S.A., O.A.C., Guelph, Ont.:

"The Best Varieties of Barley, Wheat, Peas and Oats," lecture and discussion one hour; "Experiments in Growing Roots and Potatoes," lecture and discussion one hour; "The Value of Clover," lecture 25 minutes, discussion 25 minutes; "Succulent Food for Live Stock," lecture 25 minutes, discussion 25 minutes; "Agricultural Experiments," lecture 30 minutes; "The Ontario Agricultural College," lecture 30 minutes.

Without reference to politics, divide the institute printing fairly between the newspaper publishers in the district.

Many of the officers are at a loss to know what they should pay for printing. In order to assist such parties, I have procured the following quotations from a well known printing house:

"100 posters, 21x27	$2 50
Subsequent 100's from same form	0 50
200 programmes, 11x5½	1 75
Subsequent 100's	0 30

The above provide for posters being printed on 70-lb. paper and programmes on No. 1, 60-lb. book. In every detail the work will be attractive."

Miller, Richards & Co., Toronto, in their published price for job printing, give the following quotations:

	50.	100.	Add. 100.
Eighths	$1 00	$1 25	$0 25
Quarter sheets	1 25	1 75	50
Half sheets	2 00	2 50	65
Whole sheets	3 25	4 00	1 25

Smaller than eighths, reduce price of eighths 10 to 15 per cent.

I consider these prices too high by twenty per cent. except in price of first hundred. If poorer or lighter paper were used, the prices quoted should be from five to ten per cent. still lower

When an officer or director is canvassing for members, each should take with him a complete set of the publications sent free to members during the past year. By showing these or the ones the person canvassed is most likely to be interested in, many more subscriptions can be obtained.

Each person becoming a member should be given an annual membership ticket or badge, the latter preferred. When badges are used each member should be requested to wear same whenever he or she attends institute meetings. This will tend to advertise the institute and will make more easy and effectual the work of those selected to canvass the meeting.

When possible the institute should take the form of a farmers' club. Public meetings should be held in each township at least once during each year, more frequently if practicable,

The secretary of each institute should be provided with a duplicating device. There are many excellent machines built for this purpose, all much alike but known by different names, such as cyclostyle, mimeograph, diagraph, etc. These run in price from ten dollars upwards. The use of these is to multiply copies of writing. For instance, if a secretary wishes to call a meeting of directors, by writing a single letter and using one of these machines similar copies can be produced at the rate of from eight to twenty per minute according to the machine and the ability of the operator. These appliances are extremely simple. Anyone who can write can produce equally good copies with one. From one well written copy as many as 1,500 copies can be taken off. A cheaper device is the autograph pad, costing from $2.50 to $5 according to size. By using special ink, from one writing twenty to fifty copies can be procured at the rate of three or four per minute. For institute work a mimeograph of small size will be found most serviceable.

RULES GOVERNING DELEGATES.

1. Each speaker is expected to master thoroughly the Act and the rules governing institutes.

2. Each delegate is requested to study thoroughly the conditions and needs of the district to which he or she is sent as a speaker, and to prepare his addresses or papers accordingly.

3. The person whose name is placed first on the list in each division is chairman of that deputation, and is expected wisely to direct and control the work of that delegation, also the institute meetings to which he is sent.

4. Each delegate is required to forward to the Superintendent a copy of at least one of his or her addresses; (the one which has proved most acceptable to the hearers preferred, or the one chosen by the superintendent), and if possible a synopsis of the debate thereon and questions and replies thereto, which will be published in the annual report of farmers' institutes or elsewhere as decided by the Superintendent. Heretofore some of the speakers have withheld their best addresses, not wishing them published, fearing that it would detract from their future usefulness. This is a mistake. The publication of an able address increases the demand for the speaker, and the public desire to hear that particular address delivered.

5. Each delegate is requested to do all in his or her power to cause full and free discussion after each paper or address has been delivered, and to procure and forward to the superintendent the name and address of each successful local speaker or essayist, and to obtain all the information possible concerning such persons; also to inform the superintendent concerning the peculiar needs of the district visited, as far as institute work is concerned. Also to forward a short report of each meeting. Was each gathering successful? If not, why not? After the meetings are thus reported the Superintendent will be pleased to receive from each deputation or speaker suggestions and advice regarding institute work in general or in any section. How can the efficiency of this important department be increased and made more valuable to the country? Each delegate or deputation is expected to give the Superintendent and the officers of institutes generally the full benefit of his or her experience.

6. The dates and hours of the institute meetings each delegate shall attend will be published annually. Each delegate is requested to arrive at each place for which he or she is advertised at the hour named or a little before, and to continue in attendance during said meeting, and enthusiastically and promptly to do his or her duty irrespective of what others may do. Should sickness or other serious cause intervene, the chairman of the deputation shall telegraph the Superintendent, in order that the vacancy may be promptly filled.

7. Long speeches, or those calculated to advertise the property of the speaker, are contrary to the rules governing institutes. Party politics in any form shall be avoided by each speaker. The chairman of each delegation and the officers of each institute are expected to see that nothing of this kind occurs. Institute speakers are expected to teach practical agriculture, nothing else.

8. Each delegate shall pay his or her expenses to the opening meeting. The chairman of each respective deputation will refund said sum and will thereafter pay all expenses of the deputation. If a delegate does not know the way to reach the first place of meeting most quickly, the necessary information may be obtained by writing to the Superintendent, or better still, by calling on the nearest railroad ticket agent, who will give the necessary information.

9. As soon as the work of a deputation or speaker is completed said persons shall forward to the superintendent all aforesaid reports, and shall furnish the financial statement in duplicate on forms provided for the purpose. All sums of one dollar and upwards shall be verified by a voucher.

10. In the case of a deputation, the above reports shall be made jointly and signed by each member of the deputation, except the financial statements, which shall be made by the chairman only. Supplementary speakers shall furnish reports giving similar information.

11. A cheque for a suitable sum to pay actual expenses will be forwarded by the superintendent to the chairman of each deputation before the opening of the first meeting.

12. The necessary expenses of each delegate are paid by the Department from the time he or she leaves home until said persons return thereto; but each is expected to exercise due economy. Each delegate will receive a daily remuneration for services for the time absent from home, Sundays excepted, but each shall go and return by the shortest and quickest route.

13. *Finally Remember.* Thorough preparation is the key to success as an institute worker. If you have little experience in this line, carefully write your papers and make them short. The assigned speakers should be careful to ascertain the time limit assigned them on the programme, and be sure to keep within said limits; the papers and talks should be illustrated as far as possible by means of blackboard work, charts, diagrams, models, specimens, etc. Discuss themes on which you are thoroughly and practically well informed, and use your own experience and that of others to enforce what you say. Avoid personalities. Be courteous; be helpful. While holding yourself in readiness to promote the success of the institute in every way possible, do not attempt to run the institute. Leave that to the chairman. Every time you speak aim to enforce some practical lesson adapted to the needs of the audience.

THE VALUE OF FARMERS' INSTITUTES.

Clinton D. Smith, M.S., Professor of Agriculture, Michigan Agricultural College, in his report for 1894, said:

"This work is invaluable to the man who is to do the teaching of subjects intimately related to practical agriculture. Nowhere else can he find as good an opportunity to put himself in touch with the people and find out their exact situation and wants."

Prof. A. J. Cook, M.S., in writing of "The Ideal Farmers' Institute—how to hold it in your Neighborhood," says: "The farmers' institute has become a recognized institution in most of the more enterprising States of our country, having won for itself a place among the several educating influences that are working to benefit the condition of the farmers. It is well, therefore, to consider the matter thoroughly in order that every effort may be made to the end that each institute should confer the greatest benefit upon everyone in attendance. When an institution becomes general, it is wise to spare no pains, thought, study and exertion to make it as nearly perfect as possible. A few cents reduction in the price of a telescope, an instrument rarely used, is of small moment; but in a box of matches, an article that goes into every house, it is of great importance. If the institute were infrequent and influenced but a few, its betterment would not be so important, but as it is now common and affects thousands, all improvement is very important.

"To secure the maximum good the institute should be largely attended by earnest, enterprising farmers, with their wives and families. Each meeting should be made in the highest degree interesting and profitable to all in attendance; and the fruits of the institute should not only be great, but lasting, in their benefits. It is the purpose of this paper to suggest methods whereby this may be accomplished; to describe an ideal institute, and to suggest how the influence may be made most powerful and lasting. Having attended and taken part in institutes in Michigan for fifteen years; in New York for three winters; in Wisconsin for two, and in Ohio for one, I am not without observation, and shall draw from the methods practised in each of these States, as they seem to me valuable.

"To secure a large attendance at a farmers' institute demands that the local interest be thoroughly aroused prior to the date of the institute. To effect this, a live, wide-awake man should visit each locality some weeks before the institute is to be held. He should be enthusiastic in the matter, and should visit personally the editors, the several clergymen, and the most enterprising business men of the place, and interest each and all of them. He should also extend to each a very cordial invitation to attend a preliminary meeting previously provided for by the leading farmers of the locality and himself, to be held the same day, where all the needful preparations should be provided for.

"At this preliminary meeting the object of the institute, the plan of conducting it, the methods of securing a large attendance, suggestions as to making it in the highest degree interesting and profitable, are all explained and discussed. It is explained that music, a display of flowers, fruits and grains, a first-class programme and a wide-awake, experienced president, are all highly valuable (especially the last two) in the make-up of the ideal farmers' institute. It is further urged that the institute be very thoroughly advertised in every paper in the county, and in the state press. Committees on music, on advertising the institute, on exhibits, and on a programme, should be appointed. In arranging the programme it is suggested that only two, or, at the most, three papers, should be given for each session. This permits discussion, which is often the best part of the institute. It is suggested that at least two or three ladies should be engaged to present papers, as this aids in securing a good attendance of ladies, which is exceedingly desirable. The man who attends an institute without his wife gains only a partial benefit. It is also suggested that the topics be live and practical, and be treated by those of experience, and that the papers be short and suggestive rather than exhaustive. It is usually wise to secure one paper at each institute upon our common schools, or upon education. This should be prepared by some competent person of the county. If the institute can arouse the farmers to the importance of education and the need of better schools, and more interest in those we have, it will have done no better work.

"It is well that information regarding reduced rates on railroads, and at hotels, when such courtesies are granted, of free entertainment of visitors from the country by the people of the town where the institute is held, and any other courtesies which may be extended, be announced in the programmes as inducements to increased attendance. Of course the music and exhibits will be mentioned in the printed programmes. These should be ready for distribution at least two or three weeks before the institute, and should be spread broadcast and copied into all the papers of the place and neighboring towns. The music not only adds to the interest and to the refining influence of the meetings, but also to the attendance. The display of fruits, etc., is instructive, and gives a text for discussion during the brief intermissions. The importance of a good president cannot be exaggerated. He keeps things lively—can stop debates that are improper, tedious or rambling, and yet hurt no one's feelings; in fact, he is the very life of the institute. The president must have sufficient force to silence cranks, prevent disturbances, and abate any nuisance. Such action is rarely needed; but when needed, it must be ready and energetic. In these days of the grange it is not difficult to secure among the farmers a first-class presiding officer in almost any farming community.

"In Wisconsin one of the conductors of the institute presides. While this secures a live president, it is not the ideal plan, as the presiding officer does not know the people, and so is at a disadvantage. In New York a new president is elected at each session. This results in securing some very poor presiding officers. I think a permanent chairman, the best in the place, right from the locality, is the right man in the right place. With these communities composed of good, wide-awake, interested men or women, all at work, there is little fear that the first two objects mentioned above, a large attendance and an instructive institute, will be surely realized. A printed circular or an autograph letter, sent a few days before the institute to all editors and clergymen in the vicinity, will quicken their memories, secure further notices in the papers and in the churches, and will pay well for the trouble. These letters call attention to the good the institute may do; the desirability of having a good attendance, and the aid that the editors and clergy may extend. It concludes with the request for their hearty co-operation. Wisconsin has a superintendent whose whole energy, and he has much of it, is spent in rousing the public interest. He sends circulars to be read in each school in the vicinity, and sends personal letters to many leading men in the country. With this preliminary work well performed the success of the institute is, I think, assured. If a stereopticon is to be used at the institute, and it is a great attracting and educating power, then this should be announced in bold type in all notices sent to schools, and in press notices. It is specially desirable to get the young people, boys and girls, interested. We should have them out in force to the institutes. The announcement of a fine exhibition with a first-class stereopticon, draws the young people as nothing else will, as our experience in Michigan shows.

"The institute generally lasts about five sessions. I think the Michigan plan of commencing with the afternoon of one day and closing with the evening of the second day is the best. It is difficult for the farmers, with their many chores, to reach the institute early in the day. Thus the first session, unless after dinner, is likely to be thinly attended. But with two rousing meetings, full of life and interest the first day, there is little trouble about the second. The wide-awake farmers feel that they cannot afford to lose any of the institute, and so all are promptly on hand at every session. When scientific papers are read, or those from experts are to be given, they should be sandwiched in at every session. Thus here in Michigan we have one or two papers from the college professors, and one or two from the people of the locality for each session. I doubt if this plan can be improved upon.

"It is exceedingly wise to have a question box, where anyone may put a question that he desires to have answered. The question box may be opened at the beginning of each session, and should be in charge of some bright, sharp, well-informed person, who should draw out the questions and either answer them himself or call upon some competent person to do so. This may be made one of the most valuable and interesting features of the institute. As before stated, the regular papers should only discuss live, practical topics; but as these are, and must be limited, the question box gives opportunity for other themes and topics to be discussed; in this way such important topics as the silo, dairying, fruit culture, care of stock, co-operation, etc., etc., will be considered, and the people will be vastly benefited. No wonder Wisconsin built 1,000 silos the summer after her fifty institutes; no wonder people everywhere, where institutes have been held, are loud in their praise and eloquent in urging their continuance.

"But how can the institutes be made continuous and most fruitful of good? Of course, as Secretary Woodward says, if a man takes his wife he will get double the information and remember more than double the amount, as nothing fixes the information like talking it over. Yet the institutes will not do all that they should unless an organization is formed at each place, or in different places in the same county, to be run by local talent and such other aid as can be brought in. In this way the good seed is sown yearly, as the institute becomes a permanent institution. This is the Michigan plan. Every place is urged to make the institute an intellectual and agricultural feast. Thus scores of counties are having their excellent institutes every winter, while of the state institutes there are to be held but 20 this winter. Each county in her turn will receive the added information and impetus which the state institute gives.

"It is only necessary to elect officers and appoint committees, which can be done in a few minutes. The greatest caution is needed, great care exercised, that good, wide-awake men are elected to fill these offices and to serve on the committees, men who will be prompt and energetic, when the next winter comes, and will see that the preliminary work is well done.

"One word more as to expense. If the institutes of each week are arranged along the lines of railroads, the expense of the preliminary meetings and of holding the institutes will be reduced. In one week I visited four places to arrange for institutes. The entire expense was not double what it would have been to visit one place alone. So much for economy in arranging places and dates of meetings. These four institutes are on one line of railroad. They commence on Monday and close on Friday, thus overlapping. Thus a part of the College force is in attendance at the commencement of one institute, and the rest at the close. All are present only the first day of the first institute of the week and the second day of the last one."

Prof. W. C. Latta, of Perdue University School of Agriculture, Lafayette, Ind., writing in 1894, said:

"It is difficult to set forth the good results of institute work in Indiana in a brief paragraph. At first the work was greatly hampered by misapprehensions on the part of very many as to the real nature and purpose of farmers' institutes. In some localities farmers' institutes were regarded as a secret farmers' organization; in others as being opposed to such organizations; in still others they were looked upon as a new political organization; and not a few regarded the institutes as a means of squandering state funds.

"An earnest effort was made to disabuse the public mind of these erroneous impressions, and care was taken to select speakers and officers whose previous record would be a guarantee that the institute work was a broad-gauge movement for the improvement of agriculture and the promotion of the industrial and material interest of the state. The erroneous impressions that were first entertained, have well nigh vanished, and the objections that were quite prevalent in portions of the state at the outset, have also become practically a thing of the past.

"The wholesome gospel of self-help and intelligent application of the approved principles and practices of agriculture have been so earnestly and so successfully proclaimed as to enlist very generally the friends of agriculture throughout the state.

"Farmers' institutes have proven a powerful agency for diffusing a knowledge of the best and most successful methods and practices of agriculture. The setting forth at the institutes of the causes of failure and conditions of success in agriculture, by practical men who have themselves been eminently successful, affords a strong incentive to effort and improvement which is meeting with general and hearty response on the part of the farmers who have attended the institutes.

"From the first it has been the policy of those who have had charge of the institute work to recognize the mutuality and independence of all the varied interests of the state and foster fraternal relations among all classes and all industries. The business and professional men of our cities and towns were quick to note this feature of the work and have given it their active support from the start. Although, as a rule, the farmers were not so quick to discern the real merits of the institute work, they now very generally understand and endorse the methods and purposes of this great movement which is bringing good to all.

"Briefly summarized, farmers' institutes have done much to allay the feeling of antagonism between town and country, which was so prevalent at first; to foster friendly relations among the agricultural classes themselves; to increase the general intelligence of the farming classes; to foster the desire for the more thorough education of farmers' sons and daughters as a means to higher successes and greater happiness on the farm; to point out the causes of failure and the conditions of success, and thereby improve the methods of agriculture; to awaken new interests and pride in agricultural pursuits; to lift the agricultural classes up to a higher plane of living and achievement and to a clearer recognition of the duties, responsibilities and privileges of the farmer as a business man, neighbor and citizen.

"The writer has given much attention to the question, and desires to express the belief that the time is ripe for further developments in the institute work. This work has, as yet, only made a beginning. The misunderstandings and the opposition that were at first encountered, have been largely swept aside, and the way is open for the steady progress of this movement, provided adequate means for carrying it forward are devised and put into effect. It is believed:

"(1) That the work should have a thorough, competent, industrious superintendent, who should devote his entire time to the devising and maturing of plans for the betterment of the work and personal supervision of the same during the season when institutes are being held.

"(2) The best men that the country affords, those who have been most highly successful in agricultural pursuits as well as institute workers, should be secured as institute speakers.

"Wisconsin expends annually upon 75 to 80 institutes, $12,000. New York devotes $15,000 to institutes each year, and Ohio practically as much as New York. The general assemblies in Michigan, Kansas, and doubtless several other states, will be asked to make large appropriations for this work the coming winter."

Mr. C. C. Georgeson, Kansas, chairman committee farmers' institutes and lecture course, writes concerning farmers' institutes:

"The season for institutes is at hand. Are you prepared to make the most of it? The popular name, 'Farmers Institute,' denotes an organization holding meetings for the mutual enlightenment of the members in the business of farming. Is there such an organization in your neighborhood? If not, why not? There is no other object of so much general interest to the people in any neighborhood; there is no other subject in the discussion of which all can join with so much unanimity of feeling, and in which all can take part and contribute from their experienee to the general fund of information; there is no other interest which, if the proper feeling exists, can draw the families together in so large numbers, for mutual enjoyment and edification; and if rightly conducted, nothing else, not excepting the farm paper, will be so effective in promoting good farming and good neighborly feeling. An institution with such possibilities ought not to languish. If for any reason no institute has as yet been organized in your neighborhood, you will receive the thanks and appreciative help of your neighbors and friends if you take the initiative in starting one.

"Interview half a dozen of the leading men on the subject and get them interested in the matter; then issue a call for a meeting of all those who may be interested in the subject, and at this meeting form an organization and fix upon the place of holding an institute in the near future. The organization made at this preliminary meeting can be of a temporary nature; the main thing is to get to work. Appoint a committee of not less than three nor more than five to arrange a programme for the coming meeting, who should also engage speakers from the outside, when it is possible to obtain them, as well as from the home talent, and who should see to the advertising of the meeting. It is important to get good men to take hold of this matter, for the success of the institute will depend upon their work. They must in a certain way be enthusiasts in order that they can inspire enthusiasm in others, and themselves be willing to give some time and trouble to perfect the arrangements. If the meeting is a success, the people will take steps to perpetuate the organization, and the institute may then be said to be well launched on its career of usefulness. We have many such organizations in Kansas, some of whose meetings it has been my privilege and pleasure to attend; and it is the beneficial results I have seen flow from these meetings which prompt me to advocate the organization of an institute in every farming community in the state.

"As to the work of the institute itself, the first essential element of success consists in having a good presiding officer. He ought to be a man of good judgment and kindly instincts, and it will be all the better if he is versed in parliamentary usage. He should be able to keep the work in hand running smoothly, one who can courteously and yet effectively hold those persons in check who are too fond of hearing themselves talk, and who on the other hand, can bring out for the benefit of the institute the experience and valuable information which he may know some one of his bashful neighbors to be in possession of. The programme should all be arranged beforehand, and promulgated in the local papers, and copies should likewise be struck off for distribution by mail and at the meeting. The arrangement of the programme has much to do with the success of the meeting. The committee having the matter in charge should decide upon the number of sessions that are to be held, and this again will depend upon the number of speakers that have been secured and the interest the people take in the matter. It is rare that the institute is of more than two days' duration, though in some localities the meetings cover three days. It is best to have three sessions daily, one each in forenoon, afternoon and evening. The subjects should be so arranged that the addresses which are supposed to be of the greatest interest should be delivered to the largest audience. The ladies should be encouraged to appear on the programme, and they can usually best attend in the afternoon and evening. It is best not to have the programme so crowded with papers that it does not allow sufficient time for discussion. The discussions are usually the most attractive features of the institute. They bring out the experience of the members, promulgate new ideas, and make it possible to look at the question from every point of view. Again, the subjects ought to be so arranged that papers dealing with the same general interest should follow each other in order to make the discussion fuller. Thus one or two sessions might be given up to stock-raising; other sessions to grain-growing, etc. It will add interest if a little music, or perhaps a recitation or two, is sandwiched in between the more solid food. Especially will these features be appreciated at the evening sessions, when the townspeople are apt to attend in force. But bear in mind that diversions of this nature are to be used only as condiments which may enable the audience to relish the viands better. Don't carry the recitation business so far that it becomes the leading feature, and the discussion of agricultural questions a mere side show. A tendency to do this may sometimes be observed. If time permits, it is a good feature to devote an hour each day to social intercourse, on which occasion lunches may be partaken of by those who think this diversion proper. At large meetings, where the discussion becomes general it may be necessary to limit each speaker to, say, five minutes, in order that all who may have something to say on the subject may be heard. If sufficient interest has been manifested, take steps for a permanent organization before adjournment, and possibly arrange for another meeting at such times as may be thought proper. At any rate, a presiding officer and an executive committee should be elected, whose duty it should be to see that the interest does not flag, and with whom the responsibility for the future work may rest.

"A live institute, well attended, is the most intensely practical school of agriculture one can conceive of. No one 'knows it all.' Everybody can learn something from somebody else, and nowhere else is practical information of the kind needed by the particular community dispensed in so liberal measure. It is a school in which experience takes precedence over theory, and in practical affairs we all acknowledge the truth of the old adage that 'experience is the best teacher.'"

FOREIGN INSTITUTES.

It is in the power of Ontario farmers to make our institute meetings what they should be. The farmers in many states of the American Union are alive to this work. They are our competitors, and to keep pace with them it is the duty of every Canadian farmer to enthusiastically assist in this work. We can learn much from one another. The institute affords the best possible opportunity to do this.

The following is a brief account of the farmers' institutes over the line. This data is printed that members of parliament, institute officers, and other interested persons may see the need of greater efforts on our part along this line.

ALABAMA. Farmers' institutes are placed in charge of the Commissioner of Agriculture, Hon. Hector D. Lane, Montgomery, Ala. Very few institutes have been held the past two years.

ARKANSAS has no system regarding farmers' institutes and no law governing the work. The professors of the state college do a limited amount of such work under the direction of R. L. Bennett. No literature on the subject has yet been issued by this state.

CALIFORNIA has no state law governing farmers' institutes and this department receives no direct aid from the state. The state university provides for the expenses of those of its staff who attend institute meetings. Localities bear local expenses. Mr. E. J. Wickson, acting director of the experimental station of this state and associate professor in charge of farmers' institutes, in a recent letter said: "Ever since the establishment of the university, the members of the teaching staff of the college of agriculture have participated in the proceedings of societies and conventions devoted to agricultural progress and the dissemination of agricultural information. Such association with practical agriculturists has secured important results. It has brought the institution and its purposes directly to the attention of those whom it aims to benefit, and has won their interest and support. It has assisted the members of the college staff by increasing their knowledge of agricultural needs and conditions; it has also, to some extent at least, given the staff opportunity to observe the natural resources and characteristics of the state, which is indispensable to any adequate knowledge of the industrial adaptations of the region. All possible participation in agricultural assemblies has been gladly undertaken, and an opportunity for freer intercourse with the people in their local meetings was welcomed. This opportunity arose from the request from the California state grange, addressed to the regents of the university, that farmers' institutes be undertaken under the auspices of the University of California, as had already been successfully done in Wisconsin and in other states. This action was taken by the regents in March, 1891, and the beginning of institute work under that name in this state was in April of that year. The holding of institutes served well in some cases to concentrate local efforts for specific purposes, as, for example, the co-operative movement for marketing the raisin product of the San Joaquin valley, began by the appointment of a committee by an institute meeting held at Fowler. In nearly all states there has been slow progress at first, but in most of them it has been attributed to the fact that the agriculturists were unused to assemblage for purposes pertaining to their own industry, and were slow to learn its benefits. As nearly as I can learn from reading, we have done about as much in three years as most other states have done. We are, in fact, just at the time in our institute history when rapid progress should commence. The conditioning of institute work upon the degree of interest manifested by localities desiring it, is in accordance with the best precedents. For example, in the State of Wisconsin, where institute work has attained the highest excellence, and at the same time the greatest popularity, and where the Legislature makes an annual appropriation of $12,000 for its prosecution, it is insisted that the locality shall share the burden and expense of the meetings. It is evidently no part of the university's enlistment in institute work to proceed upon the methods of showmen, to hire halls, bill the towns, and pay the expenses of lecturers upon the mere chance that people will attend. There must be local manifestation of interest enough to show that this phase of university extension will be welcomed and made profitable. In California this interest has differed widely in degree. The character of the meetings held thus far has been eminently satisfactory. The attendance has varied greatly, ranging from 50 to 200. In every case sharp interest has been manifested, and many resolutions have been adopted approving the effort on the part of the university. There has also been a very gratifying spirit displayed in contributing to the success of the meetings in the way of essays, addresses, and free participation in the discussions which have arisen. A file has been kept of matters of the greatest interest which have been presented, so that an extended report of the institute proceedings can be prepared for publication if arrangements should be made for it. It is very desirable that such a report should be provided for. In this way a far greater distribution of the benefits of the effort could be secured and wider interest aroused. It is customary in other states to provide for such publication."

CONNECTICUT. Mr. T. S. Gould, Secretary of the State Board of Agriculture, furnished the following information: "We have no special appropriation for farmers' institutes in Connecticut. The Board of Agriculture receives $3,500 annually from the state and the state prints also 5,000 copies of our annual report. The board spends this sum at its discretion for promoting agriculture. I receive a partial salary of $1,000 and expenses from this fund and work for myself as I get a chance. We hold one farmers' convention of three days, and use the material thus obtained for our annual report. We also hold about a dozen single day institutes or field day meetings, as we have invitations, using for our speakers mostly the staff of our two experiment stations, free. Besides this the Dairymen's Association receives $1,000 annually, and holds one meeting of three days, and this year four of one day each. Our state is so small that all who choose can attend our three days' meeting. We publish no bulletins nor furnish any material regularly for the press, but they readily accept anything we wish published. The Connecticut Agricultural Experiment Station at New Haven, and the Storrs Agricultural Experiment Station at Storrs, publish annual reports which are bound with ours. They have also 7,000 copies for their own use, and also publish four bulletins. The reports and bulletins sent by them are franked. Our board receives no free postage or railroad fare free, but at our winter meeting we get a small concession from railroads, the same as is given to other organizations. The Connecticut Society of University Extension are also holding some half dozen lecture courses in the state this winter."

North Carolina. H. B. Battle, Ph. D., director of the agricultural experimental station, in a letter of recent date says: "We have no regular organized system of farmers' institutes instituted by law in this state. We hold a great many institutes but not in any organized way. Very beneficial results have been caused by these institutes. We send press bulletins regularly to every newspaper in this state, as well as to a number of agricultural journals in different parts of the country. To some forty papers in this state we furnish plate matter containing these agricultural articles already set up, which plan is highly appreciated by the different papers.

Colorado. In this state, farmers' institutes are conducted under the State Board of Agriculture. Newspaper bulletins are regularly issued. Within the last year a determined and systematic effort has been made to awaken farmers to a more lively interest in improved methods in farming. Recently the Secretary of the State Board of Agriculture prepared a bulletin for distribution within this state, in which practical and servicable hints were given as to the best methods of organizing and conducting farmers' institutes.

North Dakota has no institute system. A few meetings have been held in different localities, but always under the auspices of a local committee, to which members of the State Agricultural College Faculty have been invited.

South Dakota. The Legislature passed in 1891, the following very brief law providing for farmers' institutes: "Be it enacted by the Legislature of the State of South Dakota, that the Board of Trustees of the State Agricultural College of South Dakota, with the approval of the regents of education, be, and are hereby authorized to appoint and hold farmers' institutes in various places throughout the State of South Dakota, at such times and places as they in their judgment may deem best for the more complete instruction in the best methods of scientific and modern farming, stock raising, butter and cheese-making, and other subjects of interest and importance to the common farmers." Under this law the authorities of the college have appointed a man to be institute director. There are no very definite regulations concerning institutes. As the college vacation comes in the winter, he usually provides for the holding of ten or a dozen institutes during the winter. These institutes are conducted and carried on mostly by members of the college faculty. They are held wherever communities will pay the ordinary local and incidental expenses. The state appropriates nothing. The railroads provide transportation for the lecturers and director, and the communities pay their other expenses. In regard to press bulletins, the faculty of the college, in connection with the students of the same, publish a periodical twice a month during the sessions of the school. This periodical is supported in part by the students, and is under common management. It is made the medium of communication through which press bulletins, prepared by members of the faculty or of the experiment station staff, are communicated to the farmers of the state. It is not sent to very many of the farmers, but it is sent to all of the newspapers of the state, and these articles prepared by the faculty are often noted, copied, or commented upon by the newspapers. The value of farmers' institutes seems to be pretty generally recognized throughout this and the neighboring states.

FLORIDA. O. Chute, M.S., LL.D., President of the Florida Agricultural College, in reply to a recent letter of inquiry, said: "No farmers' institutes are held in this state. I hope to make a better report at some future time. All of the experiment stations organized under the Hatch Act in the United States are granted the privilege of franking their official bulletins through the mails. The railroad companies in Florida, have been generous in granting free passes to the director of the experiment station here at Lake City. In a few cases they have given passes to employees. Whenever the head of a department in the station is to travel through the state, on experiment station business, he is usually granted a trip pass bv any of the railroads to which we apply. I have issued during the past year several press bulletins containing articles from the forthcoming bulletins. I found the plan a good one.

GEORGIA. There is no legally authorized farmers' institute association in this state. Dr. H. C. White, President State College Agriculture and Mechanics, Athens, Ga., has held, during the last two years, a number of institutes in a sort of desultory way. There is no appropriation by the state for such work. The Director of Georgia Experiment Station supplies fifty weekly newspapers in the state with plate matter, say, three columns newspaper measure, through A. A. Kellogg Newspaper Co., Atlanta, Ga., (also in Chicago, Ill.) These plates are set up and printed as part of the make up of the subscribing newspaper. The director pays the Kellogg Newspaper Co., the papers being put to no expense whatever.

INDIANA. The report of the Superintendent of Institutes furnishes us with the following: "In behalf of the Committee on Farmers' Institutes, I hereby submit a brief report of the work from its inauguration under state auspices, in 1889, to the 31st of October, 1894. During this time the institute has been conducted under an Act of the General Assembly for the Encouragement of Farmers' Institutes, which was approved March 9th, 1889, and reads as follows:

Sec. 1. "Be it enacted by the General Assembly of the State of Indiana, that it is hereby made the duty of the Committee on Experimental Agriculture and Horticulture of the Board of Trustees, together with the Faculty of the School of Agriculture of Purdue University, to appoint, before November 1st of each year, suitable persons to hold in the several counties of the state, between the 1st day of November and the 1st day of April of each year, county institutes, for the purpose of giving to farmers and others interested therein instruction in agriculture, horticulture, agricultural chemistry, and economic entomology."

Sec. 2. "Such institutes shall be held at such times and places as said committee and faculty may determine, and under such rules, regulations and methods of instruction as they may prescribe. Provided, however, that such institutes shall be so conducted as to give to those attending the results of the latest investigations in theoretical and practical agriculture and horticulture."

Sec. 3. "For the purpose of carrying out the provisions of this Act, paying the salaries of instructors and other necessary expenses, the sum of $5,000 is hereby appropriated, to be expended under the direction of the said committee of said board of trustees, and they shall annually report such expenditure and the purposes thereof to the Governor."

Organization of the Institute Work.

The immediate supervision of the work contemplated in the Institute Act was delegated to a committee of the faculty of Purdue University, consisting of the president of the university, the director of the agricultural experiment station and the professor of agriculture, the last named officer to act as superintendent of institutes, arrange all details and take immediate general supervision of the work. Those of the members of the State Board of Agriculture who consented to act, were appointed district chairman in their respective agricultural districts, which provided for about one-half the counties in the state. In the remaining counties the various agricultural fair associations and other farmers' organizations were invited to take charge of the work in their several localities, the presiding officers of such organizations being appointed chairmen within their respective counties. Early in the history of the work the necessity of local organization in many of the counties for institute work became apparent, and was therefore advised and effected. The plan of district chairman was consequently abandoned at the end of two years for the more direct method of appointing a local head in each county. At the present time local institute associations exist in about nine-tenths of the counties. These organizations have been formed for the specific purpose of taking local supervision of the institute work and usually consist of a president, township vice-presidents, secretary, treasurer, and various committees. In the remaining counties the work is carried on by agricultural fair associations or by county agricultural and horticultural societies which exist mainly for the purpose of discussing agricultural questions. The chairmen of these several organizations are the recognized local heads of the institute work in the several counties and as such are duly authorized to act, by the superintendent of institutes, under the regulations adopted by the committee.

How the Institute Work has been Conducted.

The committee on institutes has, from year to year, mapped out the general plan of conducting the work. This plan is substantially as follows: Previous to the opening of each institute season the superintendent has issued full and specific instructions to the county institute chairmen, provided an extended list of speakers, and arranged the schedule of institutes, acting with the advice and consent of the county chairmen. For convenience and economy the counties have been arranged in groups—usually of three—so that the same speakers could attend, on consecutive days of the week, the several meetings of the series. Each local association has been expected to furnish a suitable hall for the place of meeting, prepare a programme of exercises and make other necessary arrangements for and conduct the institute work in accordance with the instructions of the superintendent. From year to year the printed instructions sent out have been supplemented by letters from the superintendent of institutes, giving instructions, suggestions, advice, etc. The frequent changes in the county chairmen have necessarily made the correspondence so heavy as to require, during a considerable portion of the year, the services of an expert stenographer. During the first two years, the active work of holding the institutes began with the opening of the season, about the 1st of November, and the work was extended into March of the succeeding year. Experience soon showed the desirability of condensing the work into the three winter months, which has been the rule in subsequent years.

Apportionment of the Institute Fund.

Each year a portion of the institute fund has been reserved to pay a part of the superintendent's salary, the bills for printing, postage, clerk hire, etc. The remainder has been apportioned to the several counties. The reserve was necessarily large during the first two years as the superintendent spent his entire time during the season in the field personally supervising the institute work. During these two years the direct apportionment was $40 to each institute, which was used to defray local expenses and pay the per diem and travelling expenses of speakers. As a general rule during these two years the speakers donated their services, and the direct apportion proved ample for the purposes. Believing personal supervision to be no longer necessary, no reserve for travelling expenses of the superintendent has been made since the second year, and accordingly the direct apportionment for the third and fourth years was increased to $45, the local officers, as in previous years, paying all local expenses and the per diem and travelling expenses of the speakers. During the third and fourth years complaints were frequently made to the superintendent of unequal charges by the institute speakers. This was due to the fact that the speakers were compelled to estimate their expenses in advance, in order to have the same paid before leaving the several institutes attended. It therefore seemed advisable for the superintendent to reserve a sufficient fund to reimburse the institute speakers, and apportion to the several counties a fund for purely local expenses. A careful inspection of the books in the superintendent's office showed that during the third and fourth years less than $15 was expended, on an average, in the several counties for local expenses. It would have been fair, therefore, to apportion that sum to the several counties for said expenses the fifth year of the work. In order to effect a greater saving in expenses for speakers, the counties were arranged in groups of four each during the fifth year, and a direct apportionment of $20 was made to each county, thus practically giving each institute association $5 more for local expenses than they had themselves used on an average the year previous. The financial part of the plan worked well, as the reserve of the per diem and expenses of the speakers and the direct apportionment proved adequate for the purposes named. There was general dissatisfaction, however, on the part of both speakers and local officers, with the plan of holding four meetings in a series, as the speakers found difficulty in meeting their engagements, and the local associations were not satisfied with the short time devoted by outside speakers to each institute.

After advising fully with the county chairmen throughout the state it has been decided, for the current season of 1894-5, to hold but three institutes in a series in each week, so that each speaker can be at every meeting two full days. This arrangement, which the chairmen have almost unanimously approved, will add about one-fourth to the number of weeks of institute work and considerably increase the expenses on account of assigned speakers. Accordingly for the present year, on which we have just entered, the direct apportionment has been reduced to $15 in order to provide a sufficient reserve to meet the increased expenses on account of assigned speakers. While this direct apportionment is small, and much smaller than the committee would like to make, it is still a little greater than the amount actually used for defraying local expenses when a larger fund was at the disposal of the county chairmen. It is believed that the increased time that the assigned speakers can devote to each institute will more than offset the decrease in the direct apportionment.

Number of counties holding farmers' institutes in 1889-90	50
Number of remaining counties holding institutes in 1890-91	41
Number of counties holding farmers' institutes in 1891-92	90
" " " 1892-93	89
" " " 1893-94	92

In addition to institutes held under state auspices during the first three years of the work, a number of the counties did not exhaust the apportionment on their annual institutes, and accordingly held within the institute season, second meetings, and many of the counties have held independent institutes, under purely local auspices. It is estimated that in all, over 100 institutes have been held annually under state and local auspices. It is believed that this is the best record made by any state in the Union as to number of meetings held with an appropriation so limited. It should not be understood for a moment, however, that this result has been accomplished wholly with state funds. The inadequacy of the appropriation for the work required by the Institute Act has been apparent to all the friends of the cause from the first, and with singular unanimity and generosity, institute speakers, local officers and the business and newspaper men of our cities and towns have eked out the state appropriation by private contributions of money or services rendered free of charge. I think it is apparent to all those familiar with the institute work that has been done, that the amount of money appropriated for institutes is inadequate, and that the results obtained have been accomplished largely through the self-sacrifice of the superintendent and of the large corps assisting him.

In a private letter, the superintendent, Prof. W. C. Latta, wrote: "The Wisconsin Institute Act gives pretty nearly my idea of what such an Act should be. In other words, the Act should provide an ample fund for meeting the expenses, and leave the committee or the superintendent in charge large discretionary power in the method of conducting the work. The railway companies grant special rates to our institute speakers, two being sent to each meeting, and the meetings arranged in groups of three each as a means of reducing travelling expenses. These privileges have been asked only in behalf of the speakers who go out to lecture at the institutes, but said speakers may include the superintendent or any member of the committee in charge. We issue no newspaper bulletins, but furnish the agricultural and other papers occasional notices and short articles relative to the institute work. At the opening of the institute season, we send to each newspaper in the state circulars giving list of speakers and schedule. I have no doubt that newspaper bulletins would be valuable in different ways, especially in bringing the work to the notice of the entire people. I believe, however, that the energies should be chiefly centered upon getting the very best speakers available, and in getting out large audiences to hear and converse with these speakers. The good largely comes from personal contact with men who have been personally successful in their different specialties. We have an annual appropriation of $5,000 with which we are holding ninety-two institutes each year, one in each county of the state. This is truly herculean work, with the money at our command. We hope to have the appropriation increased, but are not sure of it as yet."

ILLINOIS. I am obliged to say, that we have no system of superintendence of farmers' institutes in Illinois, hence can give you no practical information upon the subject. Our State Legislature, some years ago, passed an Act providing $50 towards the expenses of an institute each year in each county of the state. This is the only legislative action in force here in regard to the matter. The Agricultural Experiment Station sometimes issues press bulletins, and the station has from the General Government a franking privilege by which all its printed matter goes free. When our professors go to farmers' institutes, the expenses are borne by the institute.

T. J. BURRILL, President Board of Direction.

IOWA. James Wilson, Director Experiment Station, Iowa Agricultural College, writes: "We have an Institute Act here that gives $50 annually to each county in the state, to help in holding institutes. We have no superintendent of institutes, and each county manages its own meetings. We college men go out as often as our duties will permit and help in the different institutes, but there is nothing in the statute requiring this. When we attend a meeting the county pays our railroad and hotel expenses, but this is a private arrangement. The only bulletins issued in the state are by this Experiment Station, and they relate entirely to experimental work done at the station and have nothing whatever to do with the institute work throughout the state. The local self-government theory is very prominent in this state. Wisconsin and Minnesota, however, have superintendents of institutes."

IDAHO. The farmers' institutes of this state are in charge of the Agricultural Department of the University, and are considered as university extension. All bulletins and publications issued by the Experimental Station are sent free.

KANSAS. Mr. Geo. T. Fairchild, President Kansas State Agricultural College, furnishes the following: "No institute system has as yet been provided for in state appropriation. Farmers' institutes have been organized in some sixty counties of the state, under the auspices of this college. The professors are represented by from one to three of their number in each of some twenty or more institutes each winter. The college publishes a weekly paper of college news and other matter, which reaches all the newspapers of the state, and serves as a bulletin of progress. This, of course, is mailed as second-class matter at the usual newspaper rates. As to the mailing privileges, the Experiment Station alone has the franking privileges. All other college matter goes at full rates. The railroads of the state have usually in the past encouraged the farmers' institutes by granting trip passes to the professors who take part in them. They have occasionally furnished annual passes to various members of the faculty directly instrumental in developing the agriculture of the state. Several of the State Experiment Stations issue newspaper bulletins; all such are sent postage free, under the frank of the station. We have preferred to adhere to our college paper, which includes a variety of other college matter, such as would be excluded from the station bulletins. We have expectation that our state will adopt a system of institutes under state auspices, with a fund for their maintenance. In that case the college will share in those, but expect the burden to be carried by the State Board of Agriculture."

MAINE. The direction of these institutes is under the secretary of the State Board of Agriculture as its executive office. County members of the State Board look after the location and local arrangements of the institutes in their own counties, acting under the direction of the secretary. The department gets no mailing privileges from our Federal Government, these are only given to Government publications. Institute workers get no passes over any railroad with the exception of the Bangor & Aroostook, but get half rates for all attending important meetings. The board issues monthly crop bulletins during the growing season, made up of conclusions drawn from correspondents' information and their remarks as far as possible. Frequent newspaper bulletins are issued relating to our work. These are seldom of more than six or ten inch space and are very generally used. This plan is very beneficial. Mr. B. Walker McKean is the general secretary.

MASSACHUSETTS. The institute system is thus described by Mr. Wm. R. Sissons, Boston, Secretary of the State Board of Agriculture: "Our institute system is peculiar to our own state. We have no director or superintendent of institutes, but having thirty-five incorporated agricultural societies that receive $600 each from the state as bounty annually, our board, which has the oversight of these societies, requires each of them to hold not less than three farmers' institutes within their limits each calendar year. This board furnishes one speaker for each institute, who is paid from an appropriation in the hands of the board, 'for the dissemination of agricultural information by means of lectures or otherwise.' These institutes occupy only one day each and have usually two sessions. Our state is small in territory, having but 7,800 square miles and only fourteen counties. One of these counties is practically the city of Boston; another the Island of Nantucket (a single town.) So you see these (more than a hundred) institutes cover the state thoroughly. From this office is issued early in the winter a list of available speakers with the subjects they discuss, and the societies fix the date and select subjects preferred, and the arrangement with speakers is made from this office. Each winter one three-days meeting for lectures and discussion is held by the board. The best available talent is procured for these lectures, which are printed in the annual volume "Agriculture of Massachusetts." The state prints 15,000 copies of this volume for distribution in the state. We do not issue newspaper bulletins. There are four weekly agricultural newspapers printed in the state, and most of our county newspapers have an agricultural department edited with some care. This board issues monthly crop bulletins during the growing season, which are sent to all residents of the state who apply for them, the board paying the postage."

MICHIGAN. There is no special Act in the State of Michigan governing institutes. Two years ago the Legislature appropriated $3,000 to be used by the State Board of Agriculture for the purpose of holding farmers' institutes. There is now before our Legislature a bill, which we hope will become law, to appropriate $10,000 for the next two years. The institutes have been under the management of the State Board of Agriculture.

LEWIS G. GORTON,
President Michigan Agricultural College.

MINNESOTA. That veteran and successful institute man, O. C. Gregg, Minneapolis, Minn., Superintendent of Institutes for Minnesota, writes of the work in his state as follows:

"Our annual institute report is a great feature in our work, as in it we are able to spread the detail which we have not the time to give upon the platform, and if given would be forgotten. Our work is beyond doubt very successful, and the salient points which we regard in that success are as follows: First, we advertise thoroughly and we control the advertising, that is, we have it in hand, so that we know it is done; second, we man the platform with thoroughly practical and at the same time enthusiastic teachers in agriculture. We get the best material we can find for this work. We are not confined in the platform work to give all the details on any subject, because the book which we leave behind, will furnish them to be read at leisure. In short, a compound of push, tact and a love for agricultural work is the foundation of institute success. I am satisfied from my own experience, that a successful institute man must study his people, and study the condition that he has to meet. If I were called upon to do work in your Province, I should begin at once to study the people there, and to devise means by which I could first get them into the institute rooms, and then get them interested in the subjects we represented. The railroad companies advertise in our report, and from them we get mileage for our institute work. We issue no publications save this annual that I have referred to. I lay great stress upon the value of this book."

Willet M. Hays, Vice-Chairman and Agriculturist, Experiment Station, St. Anthony Park, Minn., described the institute system in Minnesota thus: "Our whole institute system is controlled by a board of directors made up of the president of the Agricultural Society, president of the State Dairymen's Association, president of the Horticultural Society, and two members of the board of regents of the university. The university has, as one of its departments, the Agricultural College and Experiment Station. Under this board Superintendent O. C. Gregg directs the entire work of the institute corps. In Minnesota institute annuals are usually given out from the platform. In this way they have quite a leverage in getting the farmers to attend the meetings. The railway companies give some transportation to the institute corps, but most of this comes in exchange for advertising which they take in the institute annual. This makes the transportation come rather cheap to the corps of lecturers. The superintendent of institutes does all the arranging for transportation with the railroads."

MONTANA. "During the first year of the existence of this station, I organized and conducted 49 meetings of farmers, having associated with me in the work, Luther Foster, Professor of Agriculture, and Dr. Williams, our V. S. I was also assisted by Mesdames Foster and Emery in topics especially of interest to women, with an occasional lecture on travel or something that was not only instructive but interesting. This work was done without warrant of law so to speak, voluntarily on our part, with the object of stimulating our farmers to a greater interest in their respective lines. So far as has been practicable, we have worked the resident talent as far as we could and in this way have stimulated interest of a local nature, and thus we ourselves have been able to get many points valuable to us in our work. I would advise that you correspond with Mr. O. C. Gregg of Minneapolis, Minn., who is superintendent of institutes for that state. They have an excellent law there, and an annual appropriation of something like $10,000 to carry on the work. One feature of their work is, that any company in the state may hold an institute each year, but are expected to furnish a meeting place free of charge, to warm and light same and do advertising. The total expense of each meeting, however, including wages of the paid workers, travelling expenses, etc, shall not exceed $100.00. Communities in which meetings are held, are required to defray all our expenses excepting our salaries. As yet this station and college has had no funds with exception of those received from the national government. We have issued only two press bulletins. These were franked to the papers and were very generally published by them. I think that this custom is quite general with the stations of the states and territories. I have nothing that would give you any light on the matter of institutes other than related. If you will permit me to express an opinion, I do not think that you need very much information on this topic, judging from the scheme as laid down in your enclosed paper to the public on the work. You have a most admirable system and I see no reason why your work might not be most beneficial in character."

J. M. EMERY,
Director Agricultural College Experimental Station.

MARYLAND. This state has no institute system, but Robert H. Miller, director of the State Agricultural Experiment Station, in a recent letter said, "The state is greatly in need of such an organization and is now taking steps in that direction."

MISSISSIPPI. Has no organization for institute work. What work is done in that line is done by the members of the experiment station force, who have frequent requests for such meetings, and arrange for them whenever possible. The railroads usually give passes to institute workers when requested to do so.

New York. The institutes in this state are under the supervision and management of a director appointed by the Commissioner of Agriculture. The director has full and entire control of the selection of speakers and of all arrangements. We issue no bulletins or newspaper reports, but the State Agricultural Society makes an annual report, which embodies many articles by the best workers of the institute force. The Legislature makes an annual appropriation of $15,000 for speakers' expenses and a per diem.

Nebraska. Farmers' institutes have been carried on for the past three years under the management of the officers of the state university, who arrange the dates of meetings at the various places in the state and provide from two to four speakers of some prominence who are thoroughly acquainted with their respective subjects. The balance of the programme is filled out by local talent provided by those who had the meeting in immediate charge. The university provides for the expenses of those who are sent out. The college staff gives its advice as to the programme, its length, subjects, time of holding meeting and such other information as the case requires, and urges upon local committees the importance of stirring up the people of their locality and getting all to take a wide interest. The meetings have always been successful and great good has been accomplished. Many of the places have now formed regular farmers' institute associations for the purpose of holding meetings each year, and enthusing the farmers with the importance of agricultural knowledge.

New Jersey. The secretary of the State Board of Agriculture directs the institute work in this state. He arranges for meetings, engages the speakers and conducts the exercises. This is done by the direction of the executive committee of the State Board of Agriculture. The law is a general one, constituting the state board, and permits the employment of lecturers in the counties of the state. There are also county boards of agriculture auxiliary to the state board ; they have their own meetings for discussion from time to time—the institutes are extra. They have no particular set of rules or by-laws, but the workers adapt themselves to circumstances. The secretary, Mr. F. Dye, Trenton, N. J., writes, "We publish an occasional bulletin and may possibly publish proceedings of our institutes."

Ohio. Farmers' institutes of Ohio are conducted under the auspices of the Ohio State Board of Agriculture, and are specially provided for by Act of the general assembly. At the close of each season's work, as provided by law, we publish in pamphlet form an account of the institutes—that is, the amount of money received from the counties in support of the work and the amount in detail expended in the work ; also selected papers delivered at the various institutes. This pamphlet is published by the state the same as other state printing and is for general, gratuitous distribution. The institutes for the season of 1894-5 closed about March 1st, after which the report for that season was got out. This institute matter is also included in the annual agricultural report, of which the state issues 24,000 copies, 5,000 of which are distributed by the board, and 19,000 through the members of the general assembly. The total amount spent in institute work by the board of agriculture is $10,175. This does not include the expenses of local organizations, which bring the total expenses above $15,000 per year.

In the last report, Mr L. N. Bonham, the secretary, said, "The past season has been more successful than that of any preceding year. The average attendance, as shown by the reports of the 150 institutes, was 503. The largest attendance reported was 2,000 at Loveland. The next was 1,500 at Cadiz. Xenia reported 1,485. Cedarville, in the same county, 1,200, and Sandusky 1,200. Piqua 1,200. Marlboro 1,000. Only five institutes reported less than 200 in attendance and one as low as fifty. The interest is on the increase, and the readiness with which discussion is carried on shows a growing ability and readiness in this line. We find, too, a far greater willingness to furnish papers. In fact we have received nearly twice as many for publication as the space allowed will permit us to enclose in the report.

The expenses of the local societies keep pace with the attendance, as will be seen by reference to the tables showing attendance and expenditures. It does not appear from reports made to this office that there is too much spent in advertising. On the other hand there is reason to believe that, where the attendance has been low, there has been a want of judicious and effective advertising of the institute. Too many committees treat their institute as a town or local affair. Whereas they do well who magnify the work and remember that every institute is a county institute, and every township and school district in the county ought to be notified in advance, so that its citizens may share in the benefits of the institute. In addition to the 150 institutes to which speakers were sent by the State Board of Agriculture, there were held many other institutes which were supplied with speakers by the enterprise and liberality of the citizens of the community in which the institute was held. For want of a better name these institutes have been called independent institutes. We have reports from sixteen of these institutes, showing an average attendance of 615. at an average cost of $40.75 per institute. We have no other features in all the institute work which speaks so well for the enterprise and intelligence of a farming community as do these institutes organized and conducted by the citizens of a neighborhood without the aid of the county or state board. It was well said by the ancients that the gods help those who help themselves. These localities are worthy of all praise and of future recognition by the committee on institutes. We find that there were six institutes reporting an attendance of 1,200 or over. Five report attendance of 1,000 or over. Eight report 800 or over. Twenty four report 600 or over. Fifty-eight report 400 or over. Forty-three report 200 or over and only six report less than 200 in attendance. If we add to the 150 to which the State Board of Agriculture sent two speakers each the sixteen independent institutes, we have on file reports from 166 institutes with an average of 554. It is to be regretted that all the independent institutes held in the state during the past year have not put their attendance on record. Still it is encouraging to know that more than 83,450 persons in Ohio have met during 1894 to discuss questions bearing on the improvement of the homes and farms of the state. Whether we consider the intellectual quickening or the improved methods, or the increased intelligence that must follow in the wake of these institutes, we are convinced that the direct benefits in any one of these lines will amply repay the counties for all the outlay. We believe there is no cheaper or more valuable educational influence at work in the state than the farmers' institutes. The institutes in Ohio have been conducted on the theory that the greatest good comes to those who take part and help themselves. The true idea of education is to draw out and induce inquiry and discussion. The pouring on process may entertain, but never can be so instructive or quickening as where all take part and feel an individual responsibility in the success of an institute. It is on this theory that speakers sent out by the board of agriculture are expected to occupy not more than half the time, leaving the other half for discussion and practical papers by local talent. Our repeated request that the local committees should seek to instruct rather than to amuse, has been followed by marked improvement, and as a rule the work at institutes has been earnest, practical, instructive and interesting.

"It is clearly unwise to change from a locality where the attendance is large and interest unflagging to one where the attendance would be small and interest no better. As a rule, it will not be wise to attempt to accommodate an audience of five hundred in a hall which will not seat half that number. The questions of attendance, capacity of hall, reported and estimated cost, must all be considered before appointments are made. On the other hand it is not wise to neglect the petitions from other less favored localities, since some of the stronger societies may properly be left to go alone, while help should be extended to less favored communities. The policy of the board is to encourage all to do what they can for self-improvement, and to extend aid where it will be most effective. Weekly press bulletins have been sent to all newspapers in the state by Chas. E. Thorne, director of the State Agricultural Experimental Station. These have proved to be of great value and are widely published by weekly and agricultural papers, not only in this territory but all over the union and in Canada."

OKLAHOMA. Mr. Jas. C. Neal, Ph. C., M.D., director Oklahoma Agricultural and Mechanical College, thus describes the system in this state: "While we have no legalized farmers' institutes in the territory, we have several associations of farmers that discuss agricultural topics, and I am the organizer of such meetings in the territory. The station issues a monthly bulletin for papers, and find it a valuable medium for short items. These papers are free in the mail, as are all other bulletins I issue."

PENNSYLVANIA. This state expends $9,500 annually for holding farmers' institutes, not including the expenses of the local societies. Institutes are held under the auspices of the secretary of the State Board of Agriculture, Thos. E. Edge, Harrisburg, Pa., and the resident members. In 1894, nearly 150 institutes were held. Under the present law, the secretary of the board is virtually the "institute director," all institute work being done under his charge. He does not issue any special institute reports, excepting the regular quarterly reports of the board, which are occasionally devoted to institute essays.

RHODE ISLAND. The farmers' institute system in this state is in the hands of the State Board of Agriculture. The law under which they are organized makes an appropriation for the purpose of superintending the investigation of the diseases of domestic animals and conducting agricultural institutes. They are required to hold at least one institute in each county of the state each winter, and as many more as the people require, and they have funds to hold. The secretary of the board is Hon. George A. Stockwell, Providence, R. I. His custom is to send out in the fall of each year to the agricultural societies, granges, etc., in the state, a list of available speakers with the subjects upon which they lecture. From this list organizations select a speaker and subject which they think will be adapted to their section. The local society furnishes hall, heat and light. The board of agriculture pays the expenses of lecturer and advertising. A stenographer is usually furnished by the board, and the report of the lecture and discussion is printed in the annual report of the board.

TEXAS. There is no organized system of institute work in Texas. Every year there are institutes held in several communities, but these depend entirely upon local enterprise for their support. There is no law in the state affecting institutes. Mr. J. H. Connell, director of the agricultural experiment station, writes, "The State Experiment Station issues quarterly press bulletins for the use of the papers of this state, some five hundred in number. We have found it beneficial, we think, to the farmers who read nothing but their local county newspapers, and have gained in this way several thousand names for our regular mailing list by individual requests."

VERMONT. Mr. C. M. Winslow, secretary of the State Board of Agriculture, writes as follows concerning farmers' institutes: "Our Board of Agriculture consists of six members, who elect a secretary who has charge of institutes. We have $5,000 a year for the work of the board aside from the cost of printing the report. We are required by law to hold one institute each year, in each county, and as many more as the condition of the county and our funds will allow. We have good meetings, well attended in nearly every county in the state, and a growing interest manifested."

VIRGINIA. This state has no special organization for conducting farmers' institutes. A few are held each year by the State Board of Agriculture, of which Col. Thos. Whithead, Richmond, Va., is secretary.

WEST VIRGINIA. Mr. John A. Myers, director of the State Experiment Station, contributed the following: "I would say that we have no state appropriation for the purpose of conducting farmers' institutes, nor have we an especially appointed officer. We, however, hold a number of farmers' institutes in the state each year, which are participated in by local talent, and by members of the station staff, whose actual travelling expenses are paid. The farmers arrange for the institute, provide a suitable hall, with music, light and heat, and about two-thirds of the programme is filled up by prominent farmers, who read essays or deliver addresses, giving their experience. The programme consists of essays, addresses, music, a query box, and the discussion of subjects of interest to the farmers. We have no special rules or by-laws for governing the assembly, except those of ordinary parliamentary usage, and we publish no bulletins giving the papers, but the newspapers generally report the proceedings quite fully. If we were to issue the bulletins as station publications, we could send them postage free to any part of the United States. We have never been able, in this state, to develop as much interest in farmers' institutes as is desirable. We always pay our fare on the railroad, but in some of the states the directors of the farmers' institutes and the institute lecturers are furnished free passes by the railroads. I would be glad to see the railroads manifest the same liberal spirit in all our states. In regard to newspaper bulletins, I would say that we frequently send out to the newspapers of the state short articles which they either publish or do not, as they see fit. At this station, we do this by manifolding, using for that purpose the Edison mimeograph, which you will find a very convenient office appliance. Our government frank does not apply to these articles and we pay postage on them. If I were to give you any advice based upon my own experience, it would be this: Be sure and have as much local talent engaged in the farmers' institutes as is practicable; especially have the ladies participate in the exercises, either in the form of supplying music or essays. Their presence always tends to add interest to the occasion. You know the story of the old elder, who in speaking of the ladies said, "God bless them, we can't get along without them; and we can't get along with them." But at the farmers' institutes, their presence will always tend to increase the interest. I used to work with a distinguished director of an experiment station, who lectured upon the principles of breeding stock, which involved a number of delicate questions, difficult to discuss before a popular audience. We joked him considerably about his lectures, as he had two of them. One we called the "strong dose," which he administered when the ladies were not present, and the other we called the "weak dose" which he delivered when they were present. The truth of the matter is, an audience very quickly overcomes all finicky ideas about proprieties when the subjects under discussion are the fertilizer problem and the questions of stock breeding, and the subjects are discussed as freely as they would be in the dissecting room of a mixed medical college. In conclusion, I beg you to excuse my lengthy epistle, but you have a grand field for operation, and if you can make up your mind to stick to the country and avoid large towns, I think you will find it possible to succeed with your work."

WISCONSIN. Mr. Geo. McKerrow, superintendent of farmers' institutes for Wisconsin, furnished the following sketch of the work in that state: "We have an institute system in this state and a special Act establishing institutes and making provision for the same. We have no local institutes. Under our present system of management, any farmer or business man, during the summer previous to the institute season, can write to this office asking for an institute in his locality, in answer to which we send out a blank petition accompanied by a letter showing what is required of the locality asking for the institute. The requirements are a free hall, heated and lighted for a two days' meeting, the promise to advertise the meeting thoroughly in their locality, and to hold a preliminary meeting of citizens to select a secretary and committees, and to have everything in readiness for the meeting when held. In signing this petition they all practically pledge themselves to fulfill the conditions of this letter. These petitions are signed and returned to this office before the first of October. From the large list of petitions sent in, I select as many places as I think we can hold meetings at, using my best judgment in placing them so as to cover the state in the best possible manner. My report is submitted to the farm committee of the board of regents of the university, and sanctioned by them. A list of the appointments is then prepared and sent to the papers of the state for publication. In this way the people of the different localities see where their nearest institutes are to be held We issue an annual bulletin, made up of the papers and discussions on the same at the closing institute or round up, which is the last meeting of the season, and to which we generally bring in outside help that our farmers may have the privilege of comparing their best methods with the best methods of other sections of the country. We have no mailing privileges, and the railroad companies do not grant our workers free passes. We get our mileage from the railroad by advertising their lines in the 40,000 copies of our bulletin, and I must say that they have been very liberal with us in the matter. We have not as yet issued any newspaper bulletins, but this winter are getting up a few short statements in regard to the institutes, which we are sending to the newspapers in the vicinities where institutes are held. This plan so far has only been fairly successful. We have no literature setting forth the advantages of farmers' institutes. Prof. Bates, of the Arkansas Experiment Station, has just spent three weeks in this state looking up our institute work preparatory to asking his state for an appropriation for carrying on the same line of work. He summed up his investigation among our farmers who were in attendance at the institutes where he was present in this way, "The farmers that I have talked with about your institutions seem to all agree, that the institutes have been worth millions of dollars to the State of Wisconsin."

WYOMING as yet has held no farmers' institutes, but the agricultural experiment station, in connection with the state university, issues regular bulletins and sometimes press bulletins, which are all gladly published, and are postage free.

MANITOBA. Mr. R. E A. Leech, Brandon, Manitoba, thus describes the system in vogue in that Province: "We have an Act and rules governing farmers' institutes. We do not yet enjoy the services of a superintendent or a person devoting his whole time to the work. Neither have we an Act providing for or governing the central institute. Our central institute, which meets once during the year, in June or July, is made up as follows: The president of each local institute and one delegate for each fifty members. The whole care and charge of the institute work for the year is assigned to the central institute directorate and by them assigned to an executive committee, composed of the president, vice-president and secretary. The government retain the appropriation and pay the central institute accounts, when certified to by the secretary and one member of the executive committee. The grant last year was $1,500. Out of this amount it took $600 for our report. The Government grant to local institutes is 50 cts. per member. We have no mailing privileges, even pay postage on our reports, which we consider we should be relieved from. I am granted trip passes by all the railways in the Province, as secretary and organizer, and at the present time the question of granting our president the same privilege is being considered and will probably be granted. We issue no newspaper bulletins. Considering the condition of the country, the institute work in Manitoba has been very successful, a great future is before it.

REPORTS OF INSTITUTE MEETINGS.

DIVISION I.

JOHN MCMILLAN, M.P., Seaforth, Ont.: "Cultivation of Corn," "Preparing Corn for the Silo," "Cultivation of the Soil for Roots or Grain Crops," "Farmers' Institutes," "Underdraining," "Care of the Manure Heap," "How to Apply Manure to the Land," "Breeding, Feeding and Exporting Beef Cattle to Britain," "The Benefits of Dehorning," "The Breeding and Care of Heavy Draught Horses," "Farm Implements," "Make Home Attractive," "Why Boys Leave the Farm."

ALEX. E. WARK, Wanstead, Ont.: "How to Manage a Dairy Farm in Ontario and Make it Pay," "Vital Points to be Observed, Particularly in Supplying Dairy Goods to the English Market," "Pioneer *versus* Modern Life on the Farm."

D. W. BEADLE, Toronto: "The Apple Orchard," "The Pear Orchard," "The Plum Orchard," "The Vineyard," and *any* of the *small fruits*, as the Strawberry, Raspberry and Blackberry, etc., including location, soil, preparation of ground, planting, pruning, cultivation, varieties, gathering, packing, marketing, injurious insects and how to destroy them, destructive fungi and how to prevent their injuries. "Elements of Success in

Fruit Growing," "The Ideal Farmer," "Importance of Knowing the Life-Story of Our Insect Foes," "Some Interesting Facts in the Modes of Development of the Harmful Fungi."

1.	Drayton	W. Wellington	Jan. 2nd,	1.30 p.m.
2.	Clifford	W. Wellington	" 3rd,	1.00 p.m.
3.	Paisley	C. Bruce	" 4th,	10.00 a.m.
4.	Port Elgin	N. Bruce	" 5th,	10.00 a.m.
5.	Tara	N. Bruce	" 8th,	10.00 a.m.
6.	Durham	S. Grey	" 9th,	10.00 a.m.
7.	Ayton	S. Grey	" 10th,	1.00 p.m.
8.	Kenilworth	E. Wellington	" 11th,	1.00 p.m.
9.	Damascus	E. Wellington	" 12th,	10.00 a.m.
10.	Teeswater	S. Bruce	" 14th,	1.00 p.m.
11.	Holyrood	S. Bruce	" 15th,	10.00 a.m.
12.	Ripley	C. Bruce	" 16th,	1.00 p.m.
13.	Wingham	W. Huron	" 17th,	10.00 a.m.
14.	Brussels	E. Huron	" 18th,	10.00 a.m.
15.	Atwood	N. Perth	" 19th,	10.00 a.m.
16.	Milverton	N. Perth	" 21st,	1.00 p.m.

Report of Mr. John McMillan, M.P.

Drayton. The first meeting held at Drayton was a success. The hall would not hold all who came to the evening meeting. Jas. McEwing, the Secretary, is the right man in the right place.

Clifford. An excellent meeting. Alex. Drummond, the President, is a most suitable man for the position.

Paisley was a grand meeting.

Ripley successful. Wm. McBride, the President, deserves credit for his efforts. John S. McDonald, M.P.P., James Rowand, M.P., and Wm. Houston, M.A., Superintendent of Teachers' Institutes, rendered valuable service in this riding.

Port Elgin James Muir, the President, is an able man and a good speaker. He takes a deep interest in institute work. All the sessions were successful. A deep interest is taken in dairying, cattle breeding and feeding.

Tara. John Douglas is a model secretary, the most orderly we met. A good programme was prepared and everything was in good order. The Vice-President gave an excellent address on institute work. Dairying was the favorite theme.

Durham. Geo. Binnie is an excellent secretary; the President, Thos. Brown, is also a good man for the position. This was the largest and most enthusiastic institute meeting we have ever attended. From six to seven hundred were present, and many had to go away for lack of room.

Ayton. This meeting was not so successful.

Kenilworth Though the President and Secretary are excellent men, no programme was arranged. Institute work is new in this district. The meeting was instructive and calculated to do much good.

Damascus. Though the institute is young, the material is here with which to build a successful institute.

Teeswater. The meeting here was a success. The President, Jas. Tolton, delivered an excellent address.

Wingham. A grand meeting. Wm. Howell, the Secretary, is an excellent officer; the programme was well arranged. The meetings at Brussels, Atwood and Milverton were successful. Mr. Thos. Magwood, M.P.P., rendered valuable assistance at the last meeting.

REPORT OF MR. A. WARK.

All the best conducted meetings were those having for their officers young men, and unless we can get our young people to turn out and take an active part in these meetings, the outlook for improved methods in agriculture is very gloomy. The older people have been travelling in the same old rut so long, that it seems very hard for them to get out, so that we must look to the young and rising generation for the necessary improvements. I think there should be a change made in the number of sessions, so as to give more time for discussing the different subjects, and also to make more room for local men. Every institute should have a programme, showing the time each speaker will be on, and also his subjects. If each person present would provide himself with a small book or piece of paper and pencil and dot down any questions he or she wishes to ask, and put them after the speaker is through, it would be much more satisfactory to the person speaking and to the person asking the questions.

DIVISION II.

WM. RENNIE, O.A.C., Guelph, Ont.: "Clover Culture," "Culture of Field Roots," "Rotation of Crops," "Ridding the Land of Weeds," "Stock Feeding," "Beautifying the Farm."

A. MCNEILL, Windsor, Ont.: "The Advantages of Spraying Fruit Trees," "Fruit Growing on the Farm," "When, Where and How to Plant Fruit Trees or Bushes," "When and How to Sell Fruit," "Underdraining," "Production, Care and Application of Manure," "Book-keeping for Farmers," "The Farmer's Library."

(†) JAS. G. MUNRO, Embro, Ont., representing the Good Roads Association of Ontario: "The Road Question in all its Bearings;" also "Mixed Farming," "Dehorning," "Bee-keeping on the Farm," "Poultry on the Farm," "Farm Life."

(*) ISAAC USHER, Thorold, Ont., (alternate with Mr. Munro), representing the Good Roads Association of Ontario: "How Roads Should be Constructed," "How Best to Maintain Them." He will also speak on "Concrete Walls," "How to Build Them," "The Cost of Same," "Concrete Floors, Troughs, etc." "The Proper Ventilation of Stables," and other topics connected with farm buildings.

*1.	Galt	S. Waterloo	Jan.	2nd, 10.00 a.m.
*2.	New Hamburg	S. Waterloo	"	3rd, 1.00 p.m.
*3.	Mitchell	S. Perth	"	4th and 5th, 1.00 p.m. on 4th.
*4.	Brucefield	S. Huron	"	8th, 10.00 a.m.
*5.	Exeter	S. Huron	"	9th, 10.00 a.m.
*6.	Parkhill	N. Middlesex	"	10th, 10 00 a.m.
†7.	Thedford	E. Lambton	"	11th, 10.00 a.m.
†8	Camlachie	E. Lambton	"	12th, 1.00 p.m.
†9.	Brigden	W. Lambton	"	14th and 15th, 10.00 a.m. on 14th.
†10.	Appin	W. Middlesex	"	16th, 10.00 a.m.
†11.	Mount Brydges	W. Middlesex	"	17th, 10.00 a.m.
†12.	Byron	E. Middlesex	"	18th, 1.00 p.m.
†13.	Coldstream	E. Middlesex	"	19th, 1.00 p.m.
†14.	Ilderton	N. Middlesex	"	21st, 1.00 p.m.

REPORT OF MR. RENNIE.

Following is a record of the attendance at the various sessions of institutes visited:

January 2nd, Galt, afternoon 35, evening 30. January 3rd, Haysville, afternoon 110, evening 300. January 4th, Mitchell, afternoon 65, evening 60. January 5th, Mitchell, morning 75, afternoon, 100. January 8th, Brucefield, forenoon 40, afternoon 90, evening, 400. January 9th, Exeter, morning 80, afternoon 300 January 10th, Parkhill, morning 40, afternoon 80, evening 150. January 11th, Thedford, morning 40, afternoon

70, evening 100. January 12th, Camlachie, afternoon, 100. January 14th, Brigden, morning 20, afternoon 60, evening 90. January 15th, Brigden, morning 20, afternoon 50. January 16th, Appin, afternoon 150, evening 600. January 17th, Mt. Brydges, morning 50, afternoon 150, evening 450. January 18th, Byron, afternoon 20, evening 125. January 19th, Coldstream, morning 40, afternoon 110, evening 400. January 21st, Ilderton, afternoon 50, evening 300.

REPORT OF MR. McNEILL.

I was much impressed by a paper on dairying by Mr. Robt. Baird, of Wilmot, read at Haysville. It gave his experience in using the Babcock tester and scales in a farm dairy. He gave the records of a cow, her daughter and granddaughter to show the possibilities of improving a herd. This average per cow is something over 350 lbs. of butter per year, and he confidently expects 400 in the near future.

Mr. Geo. Thompson, Forest, also gave a practical paper on "Cheese-making in Lambton County" at the Thedford meeting—too long, however, for publication in full.

Mr. T. C. Wheatly, of Blackwell, gave a most interesting talk on "weeds" at Brigden. He illustrated his subject with a very complete herbarium of weeds correctly named (scientific and common), and classified according to habits as roadside, garden and field weeds. These were displayed on an ingenious trellis, showing 80 or 100 specimens at once. Mr. Wheatly is a pleasing talker and eminently practical in his methods. He is fluent but choice in his language, and without the garrulity that usually characterizes the man with a hobby. Mr. Wheatly would make a most effective institute delegate on this subject.

The commonest faults of the local men were—

(1) Want of fluency.

(2) Want of effective arrangement of subordinate parts.

(3) Want of proper "perspective." Much time was spent on points well understood, or on which there was no difference of opinion or which were (comparatively) unimportant, necessarily limiting the time and attention given to vital points.

(4) Many of the speakers treated us to conventional talk instead of actual experience or logical deductions, and dwelt on what ought to produce the "almighty dollar" rather than on what they knew did produce it.

(5) There was a want of definitiveness in most of the papers. For instance, in feeding cattle, the terms "in full feed," "plenty of it," "liberally," were used. So, too, results were given in general terms instead of definite measures and values. Records were seldom full and accurate enough to form safe data.

There are so many men whose large experience is comparatively useless for want of the ability to express themselves, that it has occurred to me that something might be done if the secretary were to prepare a series of questions, the answers to which would embrace the essentials of the subject.

Occasionally there is a farmer whose farm and stock would serve as an object lesson, and I believe a forenoon spent in visiting such a farm under proper supervision would be most profitable. The farm of Mr. W. W. Hilborn, Leamington, is in most respects a model. The tasteful arrangement of his grounds, his fences, implements and buildings, his mode of feeding and caring for his stock, the conveniences of his stables and his way of handling manure would furnish an object lesson worth whole tomes of essays The stock farms of Mr. C. M. Simmons, Ivan, and Messrs. Graham, Ilderton, have each many excellent features. These men do not keep "show" farms, but are farming for the money there is in it, so that the commendable features would receive much more consideration than if the farm were a professional "model."

The forenoon session is never as large as the others. For this there are many good reasons. Some improvement in numbers could be made I think if all executives followed the example of Mr. W. S. Howell, Secretary of West Lambton Institute. Promptly at ten the first speaker was called; though the audience had not all arrived we went through the work with much enthusiasm. There was no lost time. No one was allowed half-an-hour to say nothing. One member did attempt to annoy the speakers but he was promptly headed off. The audience increased, but there was no break in the programme till the repertory of the delegation was almost exhausted. Even Mr. Rennie had to confess, on leaving the hall at the close of the last session, that if they had called for his talk on "roots" they would have "pumped him dry."

I am fortunate in having only favorable reports to make of my colleagues. Mr. Rennie, without being at all eloquent, never fails to secure the attention of his audience, young or old. His kindly manner and earnestness of purpose, as well as the pertinency of his matter, makes him well fitted for this work.

Mr. Usher's subject, "Concrete Walls and Floors" is one of great interest to farmers. They are beginning to appreciate the need of better buildings, but are deterred by the great cost of mason work. Concrete in most cases reduces the cost one half and makes better work. Mr. Usher is, of course an expert in cement, and even when somewhat lengthy in his remarks his audience felt that he knew what he was talking about. I would suggest that this subject be continued next year, and as a "rider" on it, a short talk illustrated with diagrams on the best methods, with cost in detail of changing the ordinary farm buildings to meet the needs of modern methods in farming. I visited a stable where 50 steers were being fed, and the feeding of which could be done in 18 minutes by one man. A saving like this by proper arrangement of stables is worth a large outlay for permanent improvement.

Of my subjects, "Spraying for apple scab and codling moth" was by far the most valuable. When time permitted I led the discussion unto the subjects of varieties to plant, care of orchard and how to prune trees. Notwithstanding all that has been said and written on "spraying," not one farmer in twenty sprays. It is a subject that must be kept before the institute for years yet. From what I learned from farmers who take proper care of their orchards and from apple buyers whom we met, I would conclude that next to dairying, apple growing is the most profitable branch that the middle and northern counties can engage in. Though I think I succeeded in making the subject fairly interesting, I yet felt the need of diagrams and specimens that could have been on exhibition during the whole meeting, and then referred to during the address. These could easily have been obtained had I anticipated soon enough the advantage of having them. Insects and specimens of their work could be conveniently mounted in a folding cabinet, weighing only a few pounds and opened for exhibition and closed for handling.

In looking over the subjects of all the delegates it will be noticed that a large proportion of the more important are common to many speakers. Each no doubt will treat them with a certain amount of individuality. Yet each no doubt could get valuable points if he had the advantage of hearing the views and knowing the methods of others, perhaps more experienced than himself. There are also hints and admonitions that cannot well be committed to paper, but which might be given orally if the opportunity offered. For these and other reasons that will suggest themselves it might be desirable to have sessions of one or two days among the delegates themselves, if the inconvenience and cost were not too great. If all the delegates met in Guelph, one or two days previous to the first meeting, the railway fares would not be materially increased. Interest in the work of institutes is certainly on the increase. The necessity for skilled workers was never greater and probably never will be, and it is just possible that a meeting such as I have proposed might increase the efficiency of the work without greatly increasing the expense.

Some institutes are making a feature of extra meetings during the year, which is certainly a step in the right direction.

Our North Essex institute is the only one, so far as I know, that has established a library. The idea is to distribute part at least of the books by mail, the institute paying postage one way. The books are not yet numerous enough to give the best satisfaction, but nearly all the 50 books are now out. Should our experiment with a library be a success, and other institutes take up the same feature, a system of exchanges could be instituted that would give each member access to a large number of books.

REPORT OF MR. USHER.

Our meetings were very successful. I was invited to speak in Brampton on "Barn Structures" by special request. At our meetings the farmers were very much interested. After our meetings, the farmers were anxious for further information on all the subjects discussed. I believe the best way to increase the interest in this most valuable work is to talk to the farmers on subjects that need their immediate attention, and on subjects that will save money for them. I find they are a critical body, and everything must be reduced to a money basis. If speakers do that successfully, they will give every speaker their utmost attention, and are very much interested and are a good audience to speak to. I think it very important that you should know just what subjects every speaker takes up, and know that he can do his subject justice. I do not think the subject of good roads is as ripe as some think. It is no doubt a good and profitable subject, but I believe there are other matters that are more interesting to farmers which will increase and develop institute work much better. I do not think Mr. Rennie has his peer in this country for this sort of work. He was listened to carefully and with the utmost attention. Every word he says is practical, and means a saving of money to the farmers, and he has the happy faculty of mingling with the farmers and everybody feels at home. He is also a nice, easy speaker. If you send out men of Mr. Rennie's stamp, the halls will not hold the people. I do not think you can find a better man than Mr. McNeill, of Windsor, for his specialties of fruit culture. He had his audience with him all the time. He is well educated and a fluent, interesting speaker; he has done all sorts of farm work and is the right kind of a man to talk to farmers.

DIVISION III.

Prof. J. H. REED, Guelph, Ont.: "Breeding Horses for Profit," "The Common Diseases of the Stomach of the Ox," "The Laws of Breeding," "The Care of the Horse," "The Points of the Horse," "The Education of the Horse," "Contagious Diseases, their Causes and Prevention."

A. H. PETTIT, Grimsby, Ont.: "The Advantage of Cold Storage to the Fruit Growers," "The Varieties of Fruit to Plant," "Fruit Growing as a Business," "Fruit Growing on the Farm," "The Advantages of Spraying Fruit Trees."

WM. DICKSON, Atwood, Ont., representing the Good Roads Association of Ontario: "How Roads Should be Constructed," "How Best to Maintain Them, etc."; also on "Rotation of Farm Crops," Dairy Farming in Connection with Cheese Production," "Tree Planting."

1. Waterford	N. Norfolk	Jan.	2nd, 10.00 a.m.
2. Port Rowan	S. Norfolk	"	3rd, 1.00 p.m.
3. Vittoria	S. Norfolk	"	4th, 1.00 p.m.
4. Delhi	N. Norfolk	"	5th, 1.00 p.m.
5. Norwich	S. Oxford	"	8th, 10.00 a.m.
6. Mount Elgin	S. Oxford	"	9th, 10.00 a.m.
7. Aylmer	E. Elgin	"	10th and 11th, 1.00 p.m. on 10th.
8. Shedden	W. Elgin	"	12th, 1.00 p.m.
9. Rodney	W. Elgin	"	14th, 10.00 a.m.
10. Blenheim	E. Kent	"	15th, 1.00 p.m.
11. Merlin	W. Kent	"	16th, 1.00 p.m.
12. Amherstburg	S. Essex	"	17th, 10.00 a.m.
13. Belle River	N. Essex	"	18th, 1.00 p.m.
14. Stony Point	N. Essex	"	19th, 1.00 p.m.
15. Chatham	W. Kent	"	21st, 1.00 p.m.
16. Thamesville	E. Kent	"	22nd, 10.00 a.m.

REPORTS OF MESSRS. REED, PETTIT, AND DICKSON.

The interest taken in these meetings is increasing year by year. In all cases those present take a lively interest, and the discussions are generally lively. It is the progressive, well-to-do farmer who attends, the poorer class of farmers being the harder to get out. I think if the local officers would advertise more freely it would be much better. We notice that wherever the meetings have been well advertised the attendance is good. In many places programmes are gotten out, often the morning of the meeting. and taken to the hall and distributed to those present. Now, we believe it would be much better if those programmes were gotten a week or so before the meeting and mailed to each farmer in the neighborhood as a personal invitation much more good would accrue. We also think that the local officers should be young, live men, who would take a lively interest in the work, not only while the annual meetings are taking place, but at all times. In our opinion no man should accept office unless he is satisfied to devote some of his time and work for the good of the institute. We think that the question of abandoning the morning meetings, except in places where two day meetings are held, should be carefully considered. With very rare exceptions, it appears impossible to get even a fair attendance in the morning. Another point is that of local papers or addresses at the meetings. We think it advisable to have one or two, not more than two, local papers at each session. In most places there are none, while in others there are probably too many, and the time has to be so limited that the speakers have not sufficient time to do justice to their subjects. We also think it would be well for local institutes to hold more meetings and discussions among themselves, and not depend too much on the delegation sent once a year by the Government.

DIVISION IV.

Prof. J. H. PANTON, O. A. C., Guelph, Ont. . "Plants and Their Effect upon the Soil," "Spraying, its Objects and Results," "Nitrogen in Agriculture," "Insects and How to Destroy Them," "Parasitic Plants and How to Overcome Them," "Agricultural Science for Rural Schools," "The Sun in Relation to Life," "The Origin of Ontario Soil."

THOMAS MCMILLAN, Seaforth, Ont.: "Farming as an Occupation," "Making Our Way in Life, "Corn-Growing and the Silo," "Breeding and Feeding Cattle," "Cultivation of the Soil."

W. W. HILBORN, Leamington, Ont.: "The Farmer's Garden, How to Make it Pay," "What Fruits to Grow on the Farm and How to Grow Them," "The New Experiment Stations—Will They Benefit the Farmer? How?" "House Plants, How to Grow and Care for Them," "How Farmers' Horses Should be Fed."

1. Freelton	N. Wentworth	Jan.	2nd, 10.00 a.m.
2. Waterdown	N. Wentworth	"	3rd, 1.00 p.m.
3. Jordan	Lincoln	"	4th and 5th, 1.00 p.m. on 4th.
4. Niagara Falls South	Welland	"	7th, 10 00 a.m.
5. Crowland	Welland	"	8th, 10.00 a.m.
6. Pelham Town Hall	Monck	"	9th, 10.00 a.m.
7. Attercliffe Station	Monck	"	10th, 10.00 a.m.
8. Fisherville	Haldimand	"	11th and 12th, 1.00 p.m. on 11th.
9. Glanford	S. Wentworth	"	14th, 10.00 a.m.
10. Binbrook	S. Wentworth	"	15th, 10.00 a.m.
11. Brantford	S. Brant	"	16th and 17th, 1 00 p.m. on 16th.
12. St. George	N. Brant	"	18th and 19th, 1.00 p.m. on 18th.

REPORT OF PROF. J. H. PANTON.

I have much pleasure in reporting that the whole series of institutes held in division four, with one exception, was a decided success. I have noticed from year to year a marked improvement in institute work. At first considerable indifference and suspicion could be observed, great reluctance to take part in discussion, and often a very poor attendance. But this condition has been largely overcome, and we find the meetings well attended and lively discussions following papers read and addresses given.

The delegates to division four were Messrs. W. W. Hilborn, Thomas McMillan and the writer.

Freelton, N. Wentworth, January 2nd, 10 a.m. Very few were present at the morning session, but in the afternoon there was a good attendance, and the discussions interesting and instructive. A large meeting was held in the evening and much interest manifested.

Waterdown, N. Wentworth, January 3rd, 1 p.m. The afternoon session was well attended, and there was no difficulty in keeping up the life of the meeting. Questions were readily put, and there seemed a readiness among members to discuss the various papers read. The evening session was largely attended, although a stormy night set in. The programme was well arranged both here and at Freelton; delightful music was supplied by local musicians, and the audience seemed to thoroughly appreciate both music and the addresses.

Jordan, Lincoln, January 4th and 5th, 1 p.m. 4th. This was a most excellent institute, and for the two days we attended, the interest never flagged. The discussions were of the most lively character; every one seemed interested and ready to take part. In the evening the house was crowded. From the beginning to the close the institute was well attended.

Niagara Falls South, Welland, January 7th, 1 p.m. This unfortunately was election day. The directors had decided to hold no forenoon session and although one was announced for the afternoon, the attendance was very poor till late, when it gradually increased. If the attendance was lacking during the day it was made up by a crush in the evening. The large hall was crowded to the doors, and many required to stand.

Crowland, Welland, January 8th, 1 p.m. A very good session was held in the afternoon and considerable interest manifested. In the evening the hall was crowded, and much enthusiasm shown by the audience.

Pelham, Monck, January 9th, 10 a.m. A very appreciative audience assembled here. Being interested in fruit, the members took a most lively interest in the papers upon that subject. There seemed to be no limit to the questions that members appeared ready to put. In most cases time had to be called, so as to make way for another paper. The sessions were well attended and at every one, day and evening, much interest was shown. The members were alive to gather information along lines which occupy their attention, and seemed to realize the benefits of science as it reveals the life history of injurious forms found in plant and insect life. The papers on agricultural topics were also well received.

Attercliffe Station, Monck, January 9th, 10 a.m. The meeting here was held in a large cheese factory not far from the station. The day was a most disagreeable one, rain and sleet continuing the whole day and night. Had the institute been held anywhere else, exceedingly few, if any would have come; but to our surprise there was a fair audience to greet us in the forenoon, and a marked interest was noticeable from the very beginning and increased till the close of the evening session. The delegates were highly delighted with the interest shown here, and will always have a pleasant remembrance of the lively discussions that followed each address.

Fisherville, Haldimand, January 11th and 12th, 1 p.m. 11th. The meetings here were largely attended during every session. The hall was crowded, and great interest was taken in the discussions. Several admirable papers were read by local men. The crush at the evening meeting was beyond description. It being a fine evening, boxes were piled up near the windows and many tried to hear from these crude platforms. We were told numbers had to return home without getting even a glimpse of the speakers, so great was the crowd at the door.

Glanford, S. Wentworth, January 14th, 10 a.m. The forenoon session was very poorly attended. In the afternoon the audience was very good and the discussions were lively and instructive. The evening meeting was excellent, and the programme seemed to meet the wishes of the audience, judging from the applause given the respective speakers.

Binbrook, S. Wentworth, January 15th, 10 a.m. I have to report this the poorest institute we attended.

Brantford, S. Brant, January 16th and 17th, 1 p.m. 16th. We have always been reluctant to hold institutes in cities or large towns, because our experience has been that they are likely to be poorly attended. In Brantford we were agreeably disappointed. The day sessions were well attended, but want of punctuality caused considerable loss of time. However, as the session went on, the seats filled and most interesting discussions followed. The evening meeting was a grand success. The Hon. Mr. Hardy occupied the chair, and the Hon. John Dryden was among the speakers. Wycliffe Hall was filled and a most enthusiastic audience greeted the speakers.

St. George, N. Brant, January 18th and 19th, 1 p.m. 18th. In the earliest days of farmers' institutes, St. George was marked as one of the best institutes in the Province. Progressive men live in the neighborhood, and they have impressed their fellows. This shows itself in meeting a most intelligent audience at an institute in St. George. The sessions of 1895 sustained the reputation of the village; most interesting and instructive papers were given by local men. Lively discussions followed all addresses. Although the night was stormy the hall was filled with an audience which any speaker might eagerly desire to address. Messrs. Wood, M.P.P. and Somerville, M.P., were present at some of the sessions.

I beg to offer the following general remarks and suggestions regarding institutes:

1. At four places the institutes continued two days, viz. Jordan, Fisherville, Brantford and St. George, and these were among our most enthusiastic, showing that a strong desire is now among farmers for light as it is revealed from the teachings of science and practice. I am inclined to favor strongly meetings commencing 1 p.m. and extending over a second day. At Pelham they besought us to intercede for two day meetings.

2. At two places only, Brantford and St. George, were we honored by the presence of members of parliament.

3. Only one institute in the twelve might be considered below the standard.

4. I believe that where the institutes are held at some distance from a railway, the expense of transport should be borne by the institute, unless its funds are in a very low condition. Every year delegates spend considerable money upon livery which might be easily avoided by institutes making proper arrangements for the transport of delegates.

5. In some institutes the members might make more effort and secure at least a few local papers. I fear the holding of institutes for one day only has a tendency to shut off local talent, for it is felt there is no time but what is needed by the delegates.

6. Institutes held upon election days are failures in most cases. At such places the institute might commence with an evening session and continue the next day.

7. Delegates should know months before whether they are likely to be sent out, so as to have their addresses in good form, and as much to the point as possible.

REPORT OF MR. THOS. MCMILLAN.

Upon the whole the meetings on our route were well attended. At four of our meetings —Pelham Town Hall, Attercliffe Station, Glanford and Binbrook—there were no local papers. The presidents and secretaries of the different institutes should be strongly urged to succeed in getting local men to deliver addresses or read papers. It seems to me that every secretary should be instructed to have programmes printed and circulated widely through the district where meetings are to be held. This would give parties so disposed a good chance to prepare upon the different subjects which come up for discussion. In many places handbills are printed, but I do not think they are generally distributed previous to the day of meeting. I think it is a mistake holding so many single day meetings. Although at most places a forenoon session is advertised, yet often there are not many present till the afternoon, and the institute is just nicely started when we have to pull up stakes and move. I am strongly in favor of two-day meetings. This plan also gives more opportunity to call out local talent. If different sections of the riding wish to be reached, call extra meetings. I would strongly advise that in future notice be given to the different institutes that they are expected to bear the expense of the transportation of deputations wherever institutes are withdrawn from lines of railway.

In order to draw out and develop local talent and enable farmers to overcome the natural feeling of backwardness in expressing their views freely and fluently before an audience, it is of the utmost importance that institutes if possible should have branch organizations in every neighborhood, which would meet occasionally for the purpose of social intercourse and friendly discussion. There is no getting over the fact that too much isolation is one of the greatest drawbacks under which farmers labor. We do not come in contact sufficiently to discuss the needs and requirements of our occupation and give each other the benefit of our knowledge and experience, but on the contrary we are too apt to grow selfish and consider (wrongfully, of course) that it would be sounding our own death-knell if we should be so imprudent as to let our neighbor know what we feel has been the secret of our success. The more we keep ourselves isolated the more does this feeling appear to grow, and by persisting in this course we soon destroy the spirit of enquiry which is so necessary to success in our business, and we thus gradually allow ourselves, almost unconsciously, to drop into that narrow groove from which in time we are only able to see and judge of things from the standpoint of our own selfish interests.

REPORT OF MR. W. W. HILLBORN.

All the meetings were very successful except one. On the whole I consider we had remarkably good meetings. At some places there was too great effort put forth to give a good local entertainment. Crowland engaged the Welland Glee Club at an expense of five dollars I think it adds to the interest of the evening session to have some music and any other form of entertainment that can be given without expense, or by local talent, provided too much time is not occupied in that way. Where professionals are employed they absorb the interest of the meeting, and the delegates do not have the same chance to impress the audience with anything that is useful. The first object sought should always be to give such information as will help the farmer, fruit-grower, etc. I think it is an easy matter to carry the entertainment part too far.

DIVISION V.

T. G. RAYNOR, B.S.A, Rose Hall, Ont.: "Tillage," "Selection and Breeding of Animals," "Selection and Management of a Dairy Herd," "Swine Breeding and Feeding," "Our Fodder Crops," "Drainage."

JOSEPH YUILL, Carleton Place, Ont.: "Fodder Corn and the Silo," "Care and Management of Dairy Cattle," "Winter Dairying," "Points of a Dairy Cow," "Care and Application of Manure," "How to Enrich an Impoverished Farm," "Sheep Husbandry," "Underdraining," "Swine Breeding," "Butter-Making," "What Shall We Teach Our Sons and Daughters?"

(*) A. W. Campbell, C. E., St. Thomas, Ont., representing the Good Roads Association of Ontario: "How Roads Should be Constructed," "How Best to Maintain Them, etc.," "Draining Land."

(†) James Sheppard, Queenston, Ont. (alternate with A. W. Campbell), representing the Good Roads Association of Ontario: "How Roads Should be Constructed," "How Best to Maintain Them, etc."; also on "Drainage—When, Where and How it Should be Done," "Fruit Growing for Profit," "Fruit Growing on the Farm," "Spraying," "The Most Profitable Varieties of Fruit to Plant," "Care of an Orchard, etc."

*1. Embro	N. Oxford	Jan. 2nd, 10.00 a.m.
*2. Innerkip	N. Oxford	" 3rd, 10 00 a.m.
*3. Elmira	N. Waterloo	" 4th and 5th, 1.00 p.m. on 4th.
†4. Alma	C. Wellington	" 8th, 10.00 a.m.
†5. Erin	C. Wellington	" 9th, 10.00 a.m.
†6. Orangeville	Dufferin	" 10th, 10.30 a.m.
†7. Shelburne	Dufferin	" 11th, 1.00 p.m.
†8. Flesherton	C. Grey	" 12th, 1.00 p.m.
†9. Owen Sound	N. Grey	" 14th, 10.30 a.m.
†10. Palermo	Halton	" 15th, 1.00 p.m.
†11. Acton	Halton	" 16th, 10 30 a.m.
†12. Guelph	S. Wellington	" 17th and 18th, 1.00 p.m. on 17th.
13. Brampton	Peel	" 21st and 22nd, 1.00 p.m. on 21st.

REPORT OF MESSRS. RAYNOR, YUILL AND SHEPPARD.

We found that wherever the institute was well officered and the meeting duly advertised the sessions were good. Those held in country villages were, as a rule, much better than any held in the larger towns. In the latter places farmers came to do business first and attend the meetings afterwards. The evening meetings are not so well attended in towns because such places are overrun with entertainments already. To particularize the different institutes, we began at *Embro*, North Oxford. It was a one-day meeting of three sessions, and the attendance was about 30, 100 and 400 respectively. The interest was good throughout, and in the evening a good programme of music and local speaking talent was provided. At *Innerkip*, the other place of meeting in this riding, the attendance was not so large, being about 18, 80 and 110. There was a keen interest taken, however, in all the subjects under discussion, and only one thing seemed to be lacking, and that was the presence of the ladies, especially at the evening meeting. They did not seem to understand that they were invited. The advertising might have been more explicit in that respect.

The next riding visited was North Waterloo. *Elmira* was the place selected for a two-day meeting, but some of the officers, deeply interested in a municipal contest, thought a one-day meeting was sufficient, and advertised for one day only. About fifty were out in the afternoon and some 200 in the evening, when a musical programme was provided.

The points selected for holding the meetings in Centre Wellington were *Alma* and *Erin.* Although the day was stormy and the municipal contest scarcely cold, the attendance at the three sessions at Alma was about 12, 50 and 175 respectively. The chief officers were live men. They had the meetings well advertised and had provided good programmes for the evening meetings, to which the ladies came in large numbers. At Erin, though we were locked out of the hall by an oversight, one of the large sitting-rooms of the hotel was soon filled with about fifty farmers, and the morning meeting was held there. In the afternoon about 90 were present, all deeply interested in the subjects and discussions ensuing. The evening meeting was the climax, for the hall, holding about 500, was well filled and a good programme was rendered.

Dufferin, the next riding visited, is in need of some change in the organization of its institute. The meetings were poorly advertised. Nevertheless interesting and profitable sessions were held, which would have been more successful had they been held at some outside point in one of the townships.

At *Shelburne* an afternoon meeting was held at which about 50 were in attendance. A lively interest was taken in the meeting.

Flesherton, in Centre Grey, was the next place visited. A good meeting is always expected here and this was no exception. About 90 were out in the afternoon and 200 in the evening. A good programme was arranged and carried out to the seeming satisfaction of everyone present.

At *Owen Sound*, in N. Grey, we had a good meeting of three sessions. The attendance was 50, 115 and 45 respectively. The evening meeting might have been improved by a programme with music and the presence of the ladies.

At *Palermo*, in Halton, there was held one of the best meetings of the series. Owing to bad train connections the delegation was unable to reach the place in time for the afternoon session, and the institute went to work nobly with their local talent and had a good meeting. In the evening the hall was literally packed, and a very interesting programme was carried out. The second day's meeting at *Acton* began with an attendance of 40, which was doubled in the afternoon, and in the evening the hall was well filled, about 400 or 500 being present. The Halton institute is a booming one and is well officered by men who know how to advertise.

From Acton we proceeded to *Guelph*. The attendance, as usual, was not large during any of the sessions. Printers' ink if used freely did not seem to be circulated very well. It was only a repetition of the meetings held in the larger centres. The attendance ranged from 30 to 60, and the last session was the largest and most interesting.

The closing meeting was held at Brampton.

DIVISION VI.

Prof. GEO. HARCOURT, B S.A., St. Ann's, Ont.: "Winter Dairying," "Butter-Making," "Care and Handling of Milk," "Fodder Corn and the Silo," "Stock Breeding and Feeding," "Fruit on the Farm," "Agricultural Education."

ROBERT THOMPSON, St. Catharines, Ont.: "Gathering and Marketing Fruit," "Cultivation of Plums, Berries, etc.," "Cultivation of Corn and Peas," "The Cultivation of Roots," "Swine Breeding and Feeding," "Country *vs.* City Life."

SIMPSON RENNIE, Milliken, Ont.: "Underdraining," "Destruction of Weeds," "The Cultivation of Grain and Root Fields," "Cattle Feeding for the British Market," "Should Agriculture be Taught in Public Schools."

1.	Weston	W. York	Jan.	2nd,	10.00 a.m.
2.	Woodbridge	W. York	"	3rd,	10.00 a.m.
3.	Bond Head	S. Simcoe	"	4th,	1.00 p.m.
4.	Thornton	S. Simcoe	"	5th,	1.00 p.m.
5.	Minesing	C. Simcoe	"	8th,	10.00 a.m.
6.	Wyevale	C. Simcoe	"	9th,	1.00 p.m.
7.	Coldwater	E. Simcoe	"	10th,	10.00a .m.
8.	Orillia	E. Simcoe	"	11th,	10.00 a.m.
9.	Meaford	N. Grey	"	12th,	1.00 p.m.
10.	Thornbury	C. Grey	"	14th,	10.00 a.m.
11.	Collingwood	W. Simcoe	"	15th,	10.00 a.m.
12.	Stayner	W. Simcoe	"	16th,	10.00 a.m.
13.	Mount Albert	N. York	"	18th and 19th,	1.00 p.m. on 18th.

REPORT OF MR. S. RENNIE.

The afternoon and evening meetings were well attended at Weston, Woodbridge. Bond Head, Orillia, Collingwood, Stayner, Thornton and Mount Albert; and at Minesing, Wyevale, Wyebridge, Coldwater and Hawkston not so well. At Meaford and Thornton we had large gatherings. At some of the places we found no local speakers had been asked to take part. I am fully convinced that if these meetings accomplish what they should, above all the president and secretary must be efficient and enthusiastic.

REPORT OF MR. R. THOMPSON.

When the attendance is small there is always a reason for it being so. One is, the directors frequently leave all the work of advertising and looking after details to the secretary and president, who very often live at a distance. Another reason is, that in some sections no effort is made to induce people to become members or to point out the advantages to be derived from belonging to the institute, except at the annual meeting, and thus the members are confined to the section where the meeting is held. Another reason is, that in too many instances no other meeting of the institute is held in the riding during the year. The remedy for this would be to select directors from every point in the riding—good, live, men—and have them responsible for the success of meetings in their section. Let the directors solicit membership at any time during the year. Local meetings should also be held at different points during the winter months, at which papers should be read by local men, and if deemed necessary, the directors could procure some outside speaker. I found at some of the meetings farmers who had never attended a meeting before, and they were delighted. The success of the meeting depends on the local workers.

DIVISION VII.

C. A. ZAVITZ, B.S.A., O.A.C., Guelph, Ont.: "The Best Varieties of Barley, Wheat. Peas and Oats," "Experiments in Growing Roots and Potatoes," "The Value of Clover," "Succulent Food for Live Stock," "Agricultural Experiments," "The Ontario Agricultural College."

D. E SMITH, B.A., Brampton, Ont.: "The Feeding of Dairy Cattle," "Ensilage and the Silo," "Butter-Making," "The Points and Characteristics of the Dairy Cow," "Essentials in Successful Breeding," "City *vs.* Country Life as an Educator," "How Law, Learning and Labor Affect the Farmer."

J. F. BEAM, Black Creek, Ont.: "How to Construct and Maintain Roads," "The Care of an Orchard," "The Culture of Small Fruits," "Dairy Farming as a Business," "Dehorning," "Stables," "Winter Care of Live Stock."

1.	Oshawa	S. Ontario	Jan. 2nd, 10.00 a.m.
2.	Pickering.	S. Ontario.	" 3rd, 10.00 a.m.
3.	Agincourt	E. York	" 4th and 5th, 1.00 p.m. on 4th.
4.	Uxbridge	N. Ontario	" 8th, 10.00 a.m.
5.	Woodville	W. Victoria	" 9th, 10.00 a.m.
6.	Beaverton	N. Ontario	" 10th, 10.00 a.m.
7.	Lindsay.	W. Victoria	" 11th, 10.00 a.m.
8.	Fenelon Falls	E. Victoria	" 12th, 10 30 a m.
9.	Bobcaygeon	E. Victoria	" 14th, 10.30 a.m.
10.	Peterborough	W. Peterborough	" 16th, 1.00 p.m.
11.	Lakefield	W. Peterborough.	" 17th, 10.00 a.m.
12.	Keene	E. Peterborough	" 18th, 10.30 a.m.
13.	Norwood	E. Peterborough	" 19th, 10.00 a m.
14.	Warkworth	E. Northumberland	" 21st & 22nd, 1.00 p.m. on 21st.

REPORT OF MR. C. A. ZAVITZ.

In company with D. E. Smith, B.A., Brampton, and J. F. Beam, Black Creek, I had the pleasure of attending meetings in fifteen localities in that portion of Ontario known as division No. 7. At thirteen places the people spoke of the meetings as being better attended than any in former years, while in one instance the attendance was about equal and in another it was less than on previous occasions. We enjoyed the trips from beginning to end, and heard many kind words in regard to the farmers' institutes, and to the work conducted at the Agricultural College.

The most successful meetings were held at Agincourt, Uxbridge, Woodville, Fenelon Falls, Lakefield, Norwood, and Warkworth. The meetings at Beaverton, Lindsay, Bobcaygeon, Peterborough, North Monaghan and Keene were not quite equal to the first mentioned list, but might justly be called fairly satisfactory.

At *Agincourt* the sessions were made very lively and instructive by the active part taken by local men through papers and discussions. Mr. R. F. Holtermann, of Brantford, joined us for the meetings at this place, and gave two interesting talks on apiculture.

A very interesting feature of the meeting at *Uxbridge* was the exhibition of a cream separator, which was brought to the meeting by the worthy secretary of the institute, Mr. Joseph E. Gould. A sample of whole milk, and also one of milk skimmed under the shallow pan system, were separated before the audience, and remarks were made by Mr. Gould and by two of the members of the deputation upon this system of cream separation.

Had not the weather proved very unfavorable during the day on which the different sessions of the institute meeting were held at *Beaverton*, this place might have been mentioned as having one of the most satisfactory meetings of the trip. Mr. Gould also had his separator at this place. At the *Lindsay* meeting a very excellent paper was given by Albert J. Davidson, advocating small farms. This paper contained many valuable points. An important feature of the meeting was the introduction of the question drawer which was opened at two different times. In this way many practical and important questions were brought before the members for discussion. The meeting at *Fenelon Falls* was very lively and interesting throughout, and was reported to have about double the attendance of former years. At *Bobcaygeon*, hundreds were said to have tried to obtain entrance at the door, but failed to do so owing to the hall being already full. There was only one session of the institute meeting held in the town of *Peterborough*, and although small, it proved to be lively and instructive. Instead of an evening session at this place, one was held at *North Monaghan* in a schoolhouse situated about five miles from Peterborough, at which place the attendance was good. The *Lakefield* meeting was one of the most successful which we had the pleasure of attending during the month of January. Besides the lectures given by the deputation, very valuable papers were read by two of the graduates of the Agricultural College who are farming in that vicinity. At *Keene*, the subject of under-draining was well handled by Mr. J. Lancaster, of that place; and at *Norwood*, the subject of hired help on the farm was taken up in a very satisfactory manner by Mr. E. Hawthorne, Warsaw. The deputation found a large number of enthusiastic and excellent institute men at *Warkworth*, and in spite of the disagreeable weather a very excellent institute meeting, which lasted for two days, was held at this place. The sessions were well attended throughout, and the local men took a very active part in reading papers and entering heartily into the discussions.

We are pleased to note that on this institute trip ex-students of the Agricultural College presided over the meetings at six out of the fifteen places. About one quarter of the local papers were given by the ex-students of the College residing in the vicinity where the meetings were held. About twelve members of parliament were seen at the meetings, some of them taking an active part in advancing the interest and value of the various gatherings in their respective neighborhoods. Seventeen practical papers and addresses were delivered by local men throughout the institutes under discussion.

On April 2nd, 3rd and 4th, Prof. H. H. Dean, Agricultural College; James McEwing, Drayton; Wm. Houston, M.A., Toronto, and the writer attended three institute meetings held in North Perth at Listowel, Millbank and Shakespeare. Of these three meetings, the one at Millbank was most successful, and the one at Shakespeare was the smallest.

I am pleased to notice the steadily increasing interest which is being manifested throughout Ontario with regard to institute work. The eighteen meetings which I attended in 1895 were on the whole the most successful which it has been my pleasure to attend since being engaged in this work.

Recommendations.

From my experience with farmers' institute work in Ontario I would offer the following recommendations as important in making the institute meetings of still greater value to this Province:

1. That there should be no institute meetings held for at least four or five days at the beginning of January.

2. That either the forenoon sessions of the institute meetings should be discontinued, or else stronger efforts should be put forward by many of the local officers to make them a more decided success in the matter of attendance.

3. That the evening meetings should not be converted too much into entertainment, but at the same time made interesting and attractive with the help of local talent.

4. That at least one or two local men should prepare practical papers and deliver them at each session.

5. That the local secretaries should be very carefully selected and that they be kept in office as permanently as possible, and that they receive remuneration for their work.

6. That the secretaries be given an estimate of the length of time required by the speakers for each of their respective subjects before the programme is arranged.

7. That there be a neatly prepared and definitely arranged programme printed for each institute, and a copy of this forwarded to members of the institute and also to as many farmers as possible who reside in the riding in which the institute meeting is held.

8. That the officers of each institute be extremely careful to have the hall properly heated, the seats conveniently arranged, and the room carefully ventilated before the hour advertised for the meeting to commence.

9. The use of the question drawer has been found of considerable advantage in helping to draw out discussion and in bringing practical questions before the meetings.

Division VIII.

H. L. Hutt, B.S.A., O.A.C., Guelph, Ont.: "The Proper Management of an Orchard," "The Farmer's Fruit Garden," "The Farmer's Vegetable Garden," "Farming as an Occupation," "Window Gardening."

J. W. Steinhoff, Sebringville, Ont.: "Selecting, Breeding and Feeding Cows," "How Dairying Benefits the Farm," "Co-operative Dairying a Necessity," "The Babcock Milk Tester," "Butter-Making on the Farm and in the Factory."

J. O. Judd, Morton, Ont., representing the Good Roads Association of Ontario: "How Roads should be Constructed," "How Best to Maintain Them, etc.;" also on "An Agricultural Problem—How shall we Keep the Boys and Girls on the Farm?"

1. Blackstock	W. Durham	Jan.	2nd, 10.00 a.m.
2. Tweed	E. Hastings	"	3rd, 1.00 p.m.
3. Tamworth	Addington	"	4th, 10.00 a.m.
4. Centreville	Addington	"	5th, 10.30 a.m.
5. Napanee	Lennox	"	8th, 10.30 a.m.
6. Stella	Lennox	"	from 1.30 p.m. on 9th till noon of 10th.
7. Shannonville	E. Hastings	"	10th, meeting at 7.30 p.m. and 11th till 4.45 p.m.
8. Wellington	Prince Edward	"	12th, 10.00 a.m.
9. Demorestville	Prince Edward	"	14th, 10.30 a.m.
10. Grafton	W. Northumberland.	"	15th, 1.30 p.m.
11. Coldsprings	W. Northumberland.	"	16th, 10.30 a.m.
12. Orono	W. Durham	"	17th, 10.00 a.m.
13. Bowmanville	W. Durham	"	18th, 10.00.

Report of Mr. H. L. Hutt.

W. Durham. Our first meeting was at Blackstock on January 2nd. Only a few were present at the beginning, but before the meeting closed the house was fairly well filled, and a lively interest was taken in the discussion. On our return, at the end of our trip, through the southern portion of the riding, three other meetings were held. An afternoon and evening meeting at Orono on the 17th, an afternoon meeting at Solina, and an evening meeting at Bowmanville on the 18th. At Solina a good audience met us and a lively discussion followed each address.

E. Hastings. The only meeting held in this riding was at Shannonville on the 10th and 11th. In spite of the heavy rains at that time the sessions were well attended. The keen discussion at each session showed that the farmers of this section are keeping abreast of the times, particularly in the line of dairying.

Addington. On the 4th, a morning, afternoon and evening session was held at Tamworth, and the same at Centreville on the 5th.

Lennox. At the two meetings in this riding, the extremes in enthusiasm met at Napanee on the 8th, the day following the municipal elections. It was evident that the farmers' institute was no match for a municipal election in point of interest. At this meeting, however, an able paper on "Poultry Raising" was given by Mr. W. J. Gibbard, of Napanee.

Our next meeting was at Stella, on Amherst Island, and the enthusiastic audiences which met us on the 9th and 10th well repaid us for the danger we experienced in crossing the newly formed ice. Here it may be said that the success of the meeting was largely due to the energy and daring of Mr. Henry Filson, the vice-president, and Mr. William Allan, who were the first to venture on the ice this season, coming over to the mainland for us, pushing and pulling a flat bottomed boat. This was to be our place of safety when the ice, which was quite thin in many places, threatened to fail us, and more than once we sought it for fear of a cold bath in the Bay of Quinte.

Prince Edward. A very successful meeting was held at Wellington on the 12th. Lively and intelligent discussion followed each address. At this meeting a practical address on dehorning was given by Harry Storey, B.S.A. The heavy snowstorm on the 13th and 14th blocked the roads and greatly lessened the attendance at the meeting at Demorestville on the 14th. The officers of this institute are thoroughly energetic and are to be commended for the success they have attained in providing good literature at cheap rates for the members of the institute. A new feature of interest at these meetings was a large advertising bulletin, on which was written, free of charge, a list of articles wanted or for sale by those present.

W. Northumberland. Our first meeting in this riding was at Grafton, on the 15th, where at both afternoon and evening sessions a number of valuable papers and addresses were given by local men. Among others, an excellent paper on "The Work of the Ontario Agricultural College," was read by Mr. Rogers, a student at that institution. In the evening Mr. C. C. Field, M.P.P., was present and took part in the programme. At Cobourg on the following afternoon a successful meeting was held in connection with the Agricultural Society meeting. In the evening we drove out to Coldsprings, where we had a crowded hall and a rousing meeting.

On the whole, the meetings were very successful. As a rule we found the best attended and most enthusiastic meetings in those sections where the people have given special attention to some particular branch of farming, such as dairying or fruit growing, and made a success of it. What is needed in many places is a more general interest in the work of the institute. More should be done in the way of introducing one or two local speakers at each meeting. The ladies, too, should be brought out in full force to the evening sessions to hear or take part in a programme of special interest to them. New features, such as a free advertising bulletin like that introduced at the Prince Edward Institute, all help to create an interest in the meetings. A more general effort, too, on the part of the secretaries to secure good papers, journals and magazines for the members at reduced rates would be productive of great good.

Division IX.

G. E. Day, O.A.C., Guelph, Ont.: "Selection in Stock Breeding," "Summer and Winter Management of Dairy Cattle," "The Brood Sow and Her Litter," "Foods and Feeding," "Corn and the Silo," "Draining," "Bacteria and Their Products," "Difficulties in Butter-Making."

L. Patton, Oxford Mills, Ont.: "Breeding, Feeding and Handling Dairy Cattle," "Paying for Milk at Cheese Factories According to Butter-Fat," "The Future of Dairying in Ontario," "Thoroughness Essential to Success on the Farm," "How to Preserve the Fertility of the Soil," "The Value to the Farmer of Experiments Conducted at Experiment Stations," "How to Make Farm Life Attractive," "The Education of Farmers' Sons and Daughters."

Mungo McNabb, Cowal, Ont.: "Essentials in Farming," "Breeding and Feeding Beef Cattle," "Selection and Breeding of Sheep," "Care and Management of Sheep," "Underdraining," "Corn as a Crop," "Management of Pigs," "The Successful Farmer."

1.	Oxford Mills	N. Grenville	Jan.	2nd, 10.00 a.m.
2.	Kemptville	N. Grenville	"	3rd, 10.30 a.m.
3.	Winchester	Dundas	"	4th and 5th, 1.30 p.m. on 4th.
4.	Newington	Stormont	"	8th and 9th, 1.30 p.m. on 8th.
5.	Cornwall Centre	Cornwall	"	10th and 11th, 1.30 p.m. on 10th.
6.	Spencerville	S. Grenville	"	12th, 10.30 a.m.
7.	North Augusta	S. Grenville	"	14th, 10.00 a.m.
8.	New Dublin	Brockville	"	15th, 10.30 a.m.
9.	Athens	Brockville	"	16th, 10.30 a.m.
10.	Delta	S. Leeds	"	17th, 10.30 a.m.
11.	Lansdowne	S. Leeds	"	18th and 19th, from 2 p.m. on 18th till 5 p.m. on 19th.
12.	Sunbury	Frontenac	"	21st, 10.30 a.m.
13.	Sydenham	Frontenac	"	22nd, 10.30 a.m.

Report of Messrs. Day, Patton and McNabb.

We submit herewith our report upon farmers' institutes attended in the counties of Frontenac, Leeds, Grenville, Dundas and Stormont.

Our first meeting was held in North Grenville, at Oxford Mills, on Jan. 2nd, and proved very successful, rather better than that at Kemptville on the following day. At the latter place Mr. Bush, M.P.P., was present and did much toward making the meeting a success.

From Kemptville we went to Winchester, where we had one of the best meetings of the trip. During the two days at this place, five sessions were held, all of which were well attended by enthusiastic audiences.

On the 8th and 9th we were at Newington, in Stormont, where a very good audience met us on the first day. On the second day the audience was small but enthusiastic.

At Cornwall Centre, on the 10th and 11th, we had rather small audiences owing to stormy weather. From this place we proceeded to Spencerville and North Augusta, in South Grenville, holding meetings at these places on the 12th and 14th respectively. The Spencerville meeting was very largely attended and successfully conducted, but the meeting at North Augusta lacked enthusiasm, due, no doubt, to the fact that it was the first institute meeting held there.

The Brockville institute held meetings at New Dublin and Athens on the 15th and 16th, South Leeds, at Delta and Lansdowne on the 17th and 18th, and Frontenac, at Sunbury and Sydenham on the 21st and 22nd. At all these places excellent institutes were held, though stormy weather interfered somewhat with the attendance at New Dublin.

Whether sessions should be held one day, or two days in a place, is a matter that must be left to the judgment of the officers of the institute. In some places it is difficult to get people to attend a second day's meeting, while in other places the second day's meeting is more largely attended than the first. In my opinion, it is a mistake to hold a two-day meeting in a place where there is little or no hotel accommodation.

The bringing out of local talent is a matter deserving of attention. Some excellent papers were read by local men at the above meetings. In some instances the titles of all the subjects sent in by the members of the deputation were placed upon the bills, and as there was never time to deal with all these subjects, someone was sure to go away from the meeting disappointed. The institute officers cannot give this matter too careful consideration. They should understand that a rather long list of subjects is sent in merely to enable them to make a choice that will suit the particular district in which the meeting is to be held. No more subjects should be advertised than can be properly discussed, and it should be seen to that every paper advertised is presented for discussion at the time specified upon the programmes. The plan of advertising a long list of subjects, and then selecting only a few of these for discussion at the time of meeting, is bound to injuriously affect the usefulness of the institute by very materially lowering it in the estimation of every man who has been disappointed. Over-crowded programmes, even when carried out, are a mistake, for frequently it happens that the people are forced to listen to subjects in which they take very little interest, while the presentation of these subjects has so crowded the programme that there is no time for full discussion of the subjects in which they are vitally interested. It is impossible to state how long should be allowed for each subject, for the importance of the subject will vary with the locality. It seems to us, however, that one hour is little enough time for the presentation and discussion of a subject that lays any claim to importance. The relative importance of the different subjects must be decided by the officers of the various institutes.

In conclusion, we wish to gratefully acknowledge the kindness with which we were received by the officers of the different institutes, and to express our admiration of the energy and enthusiasm which characterized these gentlemen. In such hands the success of the institute is assured.

DIVISION X.

Prof. A. E. SHUTTLEWORTH, O.A.C., Guelph, Ont.: "Muck and Marl," "The Most Profitable Varieties of Farm Crops, which have been determined by Co-operative Field Experiments," "Milk, Cheese and Whey," "Composition and Cultivation of Roots," "Maintaining Soil Fertility," "Warming and Ventilating Habitations."

WM. S. FRASER, Bradford, Ont.: "Swine Breeding and Feeding," "Sheep Breeding and Feeding," "Clover Growing and Curing," "Cultivation of Corn and the Silo," "Underdraining," "Butter-Making on the Farm," "The Farmer's Needs."

P. MAHON, Aberfoyle, Ont., representing the Good Roads Association of Ontario: "How Roads Should be Constructed," "How Best to Maintain Them," etc.; also on "Growing Rape and Feeding Lambs," "Town *vs.* Country Life," "Growing Corn and Making Ensilage."

1. Lancaster	Glengarry	Jan.	2nd, 10.00 a.m.
2. Vankleek Hill	Prescott	"	3rd and 4th, 1 p.m. on 3rd.
3. Maxville	Glengarry	"	5th, 10.00 a.m.
4. Duncanville	Russell	"	8th and 9th, 1 p.m. on 8th.
5. Stittsville	Carleton	"	10th, 1.00 p.m.
6. Carp	Carleton	"	11th, 10.00 a m.
7. Almonte	N. Lanark	"	12th, 1.00 p.m.
8. Pembroke	N. Renfrew	"	14th, 10.00 a.m.
9. Micksburg	N. Renfrew	"	15th, 1.00 p.m.
10. Renfrew	S. Renfrew	"	16th and 17th, 10 a.m. on 16th.
11. Smith's Falls	S. Lanark	"	18th, 10.00 a.m.
12. Perth	S. Lanark	"	19th, 10.00 a.m.
13. Lanark	N. Lanark	"	21st, 1.00 p.m.

REPORT OF MESSRS. SHUTTLEWORTH, FRASER AND MAHON.

Lancaster, Glengarry Co. The meeting at this village was advertised to begin at 1.30 p.m. on the 2nd. The officers and audience arrived in time, and the meeting was opened promptly. The afternoon audience numbered between 100 and 150, and the evening audience numbered probably 300. The subjects treated were listened to attentively, and the discussion was free and animated. The farmers of this section are deeply interested in dairying, and are well advanced in dairying information.

Vankleek Hill, Prescott Co. A two days' meeting was held here, beginning at 1 p.m. on the 3rd, and closing at 4 p.m. on the 4th. All the sessions were remarkably well attended, there being at the evening meeting probably 450, and from 150 to 200 farmers in attendance at the day sessions. Every member may be called active, ready both to ask and to answer questions. There was free discussion, and a lively interest from the beginning to the end. The members of this institute are deeply interested in dairying, the road question, underdraining, noxious weeds and how to destroy them, and the introduction of the best and most suitable varieties of grain The officers provided a most excellent evening programme of music, songs, etc., making the meeting interesting and attractive to all.

Maxville, Glengarry. The Maxville meeting opened promptly as advertised with an attendance during the day session, of 150 to 200. The discussion after each address was free and to the point. The evening attendance was large, filling the large hall to its entire capacity.

Duncanville (post office is called Russell), Russell. The meeting at Duncanville was one of the most enthusiastic we have had the pleasure of attending. The attendance from beginning to end was good. It was a two days' meeting, and each successive session appeared to be accompanied by an increasing and a renewed interest. The Russell farmers know the value of their farmers' institute, and are faithful in attendance, attention and discussion. The local assistance given by the young people at the evening meeting deserves special mention. The most enthusiastic evening meetings are met with in those places where the officers provide a substantial programme of practical addresses interspersed with music, recitations, readings, etc.

Stittsville, Carleton. The weather was unfavorable both during the afternoon and evening sessions, making the attendance small. While the audience probably did not number more than 75 to 100, there was no lack of interesting discussion. Dairying, poultry on the farm, underdraining, noxious weeds, etc., are subjects of special interest to this institute.

Carp, Carleton. The attendance was not so good as it might have been. The Carleton Co. institute meetings are held in several different places. This year at Stittsville and at Carp, next year at other points, the object being to encourage attendance by bringing the meeting to the people. This course is too frequently accompanied by slim audiences.

Almonte, N. Lanark. The meeting opened on the 12th as advertised. There was an afternoon session, but no evening session. The officers, owing to the small evening audiences during the past few years, considered it advisable to cancel the evening meeting. The audience, however, was large and representative.

Pembroke, N. Renfrew. The Pembroke institute during all the sessions was well attended. Those in attendance were enthusiastic and discussed the addresses freely. This institute is in splendid working condition.

The second days' meeting was held in *Stafford*, a point twelve miles distant from Pembroke. Although it was the first time a meeting had been held in this place, the attendance was large, and the audience fully appreciated the opportunity for acquiring information afforded them by meeting in this way.

Perth, S. Lanark. The Perth meeting was well attended, and the members, from beginning to end, took a lively interest in addresses and discussions. The evening meeting was particularly well attended, and the excellent programme of music provided added attractiveness to it. Many of the townsfolk by their presence and by joining in the discussions, etc., considerably promoted the interest of the meeting.

Lanark, N. Lanark. Notwithstanding the rain, the people of N. Lanark did not remain away or desert their institute meeting. The hall was comfortably filled during the afternoon session, and packed during the evening by an audience numbering between three and four hundred. This institute is in splendid working condition, and every member appears ready to do what he can to advance its interests. The influence of the splendid evening programme of songs, glees, etc., upon the attendance, was very evident at the Lanark meeting.

Renfrew, S. Renfrew. The business-like manner in which the officers selected subjects, arranged their programme, advertised the meetings, etc., deserves special mention. There were four sessions held, and each succeeding session was better than the preceding one. This was the best managed institute meeting we have ever attended.

Smith's Falls, S. Lanark. From various causes this gathering was not a success.

DIVISION XI.

R. F. HOLTERMANN, Brantford, Ont.: "Bee-Keeping on the Farm," "Points Essential to Successful Bee-Keeping," "Bees in Relation to Horticulture and Plant Life," "The Honey Bee—Points Interesting and Instructive," "The Proper Care of Poultry on the Farm."

THOS. H. MASON, Straffordville, Ont.: "Hog Raising," "The Home Dairy," "Butter-Making," "The Care and Food of a Dairy Cow," "How to Select a Dairy Herd," "The Outlook for the Ontario Farmer."

1.	Bracebridge	Muskoka	Jan.	29th,	10.00 a.m.
2.	Port Carling	Muskoka	"	30th,	1.00 p.m.
3.	Utterson	Muskoka	"	31st,	1.00 p.m.
4.	Emsdale	E. Parry Sound	Feb.	1st,	10.00 a.m.
5.	Edgington	W. Parry Sound	"	2nd,	
6.	Trout Lake	W. Parry Sound	"	4th,	1.00 p.m.
7.	Parry Sound	W. Parry Sound	"	5th,	1.00 p.m.
8.	Hurdville	W. Parry Sound	"	6th,	1.00 p.m.
9.	Broadbent	W. Parry Sound	"	7th,	1.00 p.m.
10.	McKellar	W. Parry Sound	"	8th,	1.00 p.m.
11.	Dunchurch	W. Parry Sound	"	9th,	1.00 p.m.
12.	Magnetawan	E. Parry Sound	"	11th,	1.00 p.m.
13.	Burk's Falls	E. Parry Sound	"	12th,	1.00 p.m.
14.	Sundridge	E. Parry Sound	"	13th,	1.00 p.m.
15.	South River	E. Parry Sound	"	14th,	10 00 a.m.
16.	Powassan	E. Parry Sound	"	15th,	10.00 a.m.

REPORT OF MR. R. F. HOLTERMANN.

Owing to storms and the great amount of snow in the Muskoka and Parry Sound district, we sometimes found it difficult to get from place to place. There is no road to Trout Lake, and Mr. J. S. Miller the president of the farmers' institute, had arranged for us to hold one meeting each, at school section No. 2 and 3, Foley township. Owing to, I think, a misunderstanding, only one meeting was announced at Emsdale, and that a morning meeting at 10 a.m. and no afternoon meeting being announced, none was held, but we got a number together for an evening meeting. A lively and increasing interest is taken in the meetings. The plan adopted of asking the local institutes to bear the expense of rigs, saved us considerable expense, and is a step in the right direction.

REPORT OF MR. THOS. H. MASON.

I met Mr. Holtermann on the train at Toronto, and we arrived at Bracebridge in due time. We had a fine meeting, much interest and good attendance. The president and secretary are competent and enthusiastic. We were driven over to Port Carling by Mr. Beaumont, of Alport, the president. The roads were extremely heavy, being only partially broken and it was snowing heavily nearly all day. There was a small meeting, but the material is good and great interest was manifested. They have an active executive board, and if the weather had been favorable there would no doubt have been a large meeting. We were driven back by Mr. Beaumont, as far as Falkenburg, where we were met by a team from Utterson, thence by rail to Emsdale. As the train was late we did not arrive until after the hour of opening, and found that nearly all the people had gone home, thinking there would only be a morning meeting. However, we had a meeting announced for the evening and one was held in the Orange hall. At Edginton, we were met by Mr. J. S. Miller, of Parry Sound, president of the West Parry Sound district. Mr. Miller is an active, energetic Scot, a persistent canvasser, and takes a great interest in the institute work. Unfortunately his zeal is not always appreciated by his colleagues, and they seem quite willing to let him do the greater portion of the work. He is an enthusiastic dairyman, and never tires of praising the resources of the district. We found the institute in a low state financially, with no county organization, and therefore no county grant, and as a great many townships are unorganized they get nothing from them, and but little from the organized townships. We found travelling very expensive here. The meeting at Parry Sound was large both afternoon and evening. The other meetings in this district were small, owing to the excessively cold weather that we encountered, the mercury ranging from 38 to 45 degrees below zero. We had a great deal of night driving to do in order to reach some suitable place to stop, and the snow was so deep that it was difficult to make more than four miles an hour. However we were promptly on time at all meetings. Mr. Miller was with us all the time, and read several papers at the meetings. The meetings at McKellar, Dunchurch and Maganetawan were very satisfactory both as to members and interest. At Maganetawan we were met by Mr. H. Muir, of Sunbridge, president of East Parry Sound district, and a practical and successful dairyman. Mr. Muir is finding a very satisfactory market for his butter at North Bay. He uses a separator and is getting good results, his cows averaging 254 lbs. of butter each in 1894. There was but a small meeting at Burk's Falls, owing to a Patron convention being held the same-day ; at Sundridge a large meeting ; and at South River a smaller one.

The visit of Mr. Holtermann has awakened a great amount of interest all over the district in bee keeping. There can be no doubt that the country is admirably adapted to bee-keeping. The great variety of elevations, the profusion of honey-making plants, and the character of the climate, all lead to the belief, that if properly understood and practised, it would be of immense value to the district. The country also seems well adapted to private dairying, the pastures being especially succulent owing to the absence of drouths, while the character of the water is especially favorable. Roots, hay, oats and peas are all very successfully grown. We found a very general interest taken in corn growing, but owing to the shortness of the season, seed from outside was often a failure. I especially recommended the selection and development of varieties that had proved successful in the district, and I have no doubt that by so doing varieties best suited to their conditions will be found. The Muskoka and Parry Sound districts are large importers of almost all kinds of farm produce and this of course gives good local markets. The tourist trade during the summer months is large and profitable, and the farmers who cater to this trade will find it to their advantage. The whole country is adapted to sheep raising, and in the near future it will occupy in Ontario, the same position as the highlands of Scotland does in the British isles.

DIVISION XII.

J. B. MUIR, North Bruce, Ont.: "Raising Hogs for Market," "First Steps in Dairying," "Butter-Making in the Home Dairy," "The Care and Food of a Dairy Cow," "How to Select a Dairy Herd," "How to Make Life Pleasant on the Farm."

ALFRED BROWN, Bethel, Ont.: "Special Farming," "Sheep Husbandry," "Saving Manure," "The Farmer's Fruit and Vegetable Garden," "The Proper Care of Poultry on the Farm," "How to Give Our Sons and Daughters a Business Education at Home."

1.	East Korah School	C. Algoma	Jan. 23rd,	2.00 p.m.
2.	Base Line School	C. Algoma	" 23rd,	7.00 p.m.
3.	Maclennan	E. Algoma	" 24th,	1.00 p.m.
4.	Richard's Landing	St. Joseph's Island	" 25th,	10.00 a.m.
5.	Marksville	St. Joseph's Island	" 26th,	1.00 p.m.
6.	Tenby Bay	St. Joseph's Island	" 28th,	1.00 p.m.
7.	Bruce Mines	E. Algoma	" 29th,	1 00 p m.
8.	Thessalon	E. Algoma	" 30th,	1.00 p.m.
9.	Iron Bridge	E. Algoma	" 31st,	1.00 p.m.
10.	Manitoulin Island, Gore Bay, Manitowaning, Little Current and other points, Feb. 2, 4, 5, 6, 7 and 8th. Delegates to arrive at Gore Bay at 1 p.m. on the 2nd.			

REPORT OF MESSRS. MUIR AND BROWN.

Owing to a storm prevailing our train was delayed and we were unable to reach the Sault before the hour advertised for our meeting. Hiring a livery team, we soon reached the school, which is about five miles from Sault Ste. Marie; and here we made our first attempt at addressing the farmers in the Algoma District. In the evening we drove to the Base Line School and addressed the farmers there. At both meetings those present understood the object of institute work, and by their questions, and the part taken by them in the discussion, we could easily see that the literature sent out by the Agricultural Department is not distributed in vain.

Next morning we started by the C. P. R. for Maclennan, and found on our arrival a number of the progressive farmers in the neighborhood were present. During the afternoon word was sent to the schools that there would be an evening meeting, and we had a large attendance at the evening session. The farmers in the neighborhood of Maclennan are anxious to have an institute of their own, as they are too far from Thessalon for successful institute work.

We next visited St. Joseph's Island, and addressed meetings at Richard's Landing, Marksville and Tenby Bay. Many of the farmers on this island are enthusiastic and progressive men, and appreciate the work done by the farmers' institute. We were informed that this island, about the size of the larger townships in Ontario, has one of the strongest institutes in the Province. The meetings were well advertised and many of the farmers, with their wives, their sons and daughters were present and took a great interest in what we had to say.

There is some excellent land on this island not yet settled that would make first class farms for young men from the older parts of the Province.

From St. Joseph's Island we crossed to the North Shore and addressed meetings at Bruce Mines, Thessalon and Iron Bridge. At Bruce Mines the attendance was smaller than we had expected, due partly to the fact that much of the land in the immediate neighborhood is not open for settlement. Most of the farmers live at least six miles from the town, which is quite an inconvenience, and also makes trade very dull at the Mines. At the conclusion of the meeting those present decided to take the necessary steps to organize an institute of their own, separate from Thessalon. From Bruce Mines we hired a teamster to drive us over to Thessalon, as the C. P. R. train would leave us one hour late for this meeting. The farmers here took a deep interest in the institute work, and we enjoyed the time spent in their company very much.

Next morning we drove to Iron Bridge; but as the day was stormy the attendance was not large. There is some fine land in this neighborhood not yet occupied, which under skilful management would make good homes in the course of a very few years.

From Dean Lake, near Iron Bridge, we took the train for Spanish River, where we met Mr. Totten, Secretary of the Manitoulin Institute, who in company with Mr. McRae, of Gore Bay, had driven over to meet us. Reaching the island in safety we found that arrangements had been made for holding meetings at eleven different places in six days. As the roads were good we were able to carry out this programme; but it made us spend more time travelling from place to place than was for the best interests of the institute. It seems to give the best satisfaction when an afternoon and evening meeting is held at one central point rather than holding more meetings, when some of them are in out of the way places. With two or three exceptions the meetings were well attended, and the farmers took a keen interest in the addresses given and also took an active part in the discussion.

The principal products of the country visited are cattle (as stockers), pigs, lambs and butter. They are in need of more cash crops. The bulk of the butter is traded out at the stores, with the exception of a little which is sent to Toronto and other points. Many parts of the district are settled thickly enough to support a good sized cheese factory or creamery, and even where sixty good cows could be kept close together we recommended establishing a cheese factory and sending a man to the dairy school and arranging for making a first-class article. Another cash crop is within their easy reach in red clover seed. Some objected to growing seed as there were no mills to hull with, as though mills would be brought in before there was any work for them. One young man near Gore Bay, Mr. Jno. Kenny, has twenty-five acres of clover he expects to cut for seed next year, and I believe he will succeed with it. In large ridings and especially in new sections, there would be some advantage in having less ground covered by the one set of officers. Great good can be done in the public schools, first, to advertise the meetings; second, to start an interest in institutes by furnishing the literature for the teacher to send home with each scholar for a week, and then returned. (This has been practised in our own school.) Third, institutes should assist in every possible way to have agriculture taken up in the public schools. This will take some good solid work, as a majority of the people seem prejudiced against it.

Some parts of Manitoulin and the North Shore, where sheep are plentiful, are in need of carding mills and woollen factories; grist mills also are in demand. There are a number of elevated lakes which would furnish cheap power.

SUPPLEMENTARY MEETINGS REPORTED UP TO DATE.

Mr. John Carnegie, M.P.P., East Riding Victoria, assisted by Mr. I. W. Steinhoff, conducted a series of meetings in Kinmount and adjoining districts, of which Mr. Steinhoff sent the following report: I think this move of Mr. Carnegie's a good one, as this section of country is very rough and grain growing cannot be pursued with any degree of success. On the other hand, the supply of wild pasture is simply unlimited, so that if comfortable quarters are provided for the cows with plenty of rations in the winter time, I think dairying will do better with them than almost anything else. However, the country is too sparsely settled for patronage to cheese factories of any size, so that I think a right system of private dairying is more adapted to their conditions than cheese factories.

Kinmount. A meeting was held in a room of the hotel on February 4th, with about 35 persons present. The desire to have a cheese factory started was expressed. Only 95 cows had thus far been promised and most of the ground had been gone over. I stated that I would not personally recommend starting a factory with less than 250 cows, so that the cost of drawing and manufacturing should not exceed $2\frac{1}{2}$ cents per pound. I gave the best advice I could as to how private dairying might be improved. Everything said was well received, and the audience took a lively part in discussing the points brought up. I pursued the same course at about all the meetings, except where cheese factories were already established, and then emphasized the conditions of the most successful dairying and co-operation.

Irondale. We had a good meeting—about 35 being present.

Gooderham. The evening was very cold. A cheese factory was wanted, but only 150 cows could be got, and a part of even this milk would have to be drawn on the railroad.

Tory Hill. A good meeting.

Wilberforce. About 27 present; there is a small cheese factory in the neighborhood but has not been in operation for the past two seasons.

Essonville. About 18 present.

Haliburton. From 25 to 30 present. Great satisfaction with the meeting was expressed. An afternoon meeting was announced for Alsaw, but on account of the storm, the condition of the roads and unavoidable delays, we did not arrive in time for the meeting.

Minden. About 30 present; a fairly good meeting. Mr. Gilbert, Ottawa, was present, and gave an address on poultry. We attempted to reach the places advertised for Saturday but could not get through.

A series of meetings was conducted by Mr. G. C. Caston and Mr. I. W. Steinhoff; these Mr. Steinhoff reports as follows:

Craighurst. One meeting, 7 p.m. Attendance fair. My own address on dairying delivered and discussed.

Hillsdale. More interest shown. Organized for cheese factory to be run the coming season.

Nottawa. Afternoon, 50; evening, 60. Good meetings, much interest being shown in both the dairy subjects and in fruit culture.

Creemore. Afternoon, 54; evening, 200 or over Gave fine musical part of programme. Both were very good meetings, the evening being next to the largest of the kind ever held in the riding. The president and secretary connected with this institute are splendid officers.

Tottenham. Afternoon, 60; evening, 150 or over. Splendid meetings. Audience discussed with lively interest the subject of dairying for two hours. Fruit culture was also well discussed, especially grafting and spraying. Residents desire a cheese or butter factory started in the neighborhood. There was a fine musical programme in the evening.

Cookstown. Afternoon, 40; evening, 75 to 80. Very good meetings, much the same spirit as at Tottenham.

Price's Corners. Afternoon, a fair meeting; evening, from 80 to 85 farmers present.

Severn (in North Orillia). Afternoon, 50; evening, 75 to 80. Good farmers' meetings. Subjects well discussed. Same music as at Price's Corners.

Maple. Some good substantial farmers present. Bills were out and the meetings were very well advertised. Meetings were also held at Kleinburg, Markham and Agincourt.

Report of Mr. Geo. Harcourt.

February 19th, Strathroy; February 20th, St. Thomas; February 21st, Simcoe; February 27th, Harriston; February 28th, Flesherton; March 4th, Pond Mills; March 12th, Tiverton; March 13th, Underwood; March 14th, Hepworth. The above were joint meetings held under the auspices of Western Dairymen's Association, assisted by institute speakers.

Strathroy. The meeting at Strathroy was a grand success. There was a very good turn out of farmers. The court house was full to overflowing, every seat being full. The platform was filled with ladies and all standing room at the back packed. Mr. Wheaton, Secretary Western Dairymen's Association, occupied the chair, and in his opening remarks explained the object of the meeting, etc.

I spoke first, opening the meeting with a few remarks, as suggested, on the farmers' institute system of Ontario. I then took up the subject of rotation of crops and explained the principles that underlie a successful rotation. Mr. J. S. Pearce spoke for a few minutes on our shipping facilities and the competition we have to meet in marketing our products, urging co-operation. Mr. J. H. Monrad, of Chicago, then took up the platform and gave a very instructive and interesting talk, touching on a number of points of interest to dairymen. The first was the tediousness of milking. He advised farmers to have that as part of the day's work and not shove it in as an extra night and morning. He advocated the girls milking and the aid of a woman in the cheese factory, and especially to run the Babcock tester, as she was more conscientious, her honesty being of a higher standard than man's, and her moral influence would go a great way to improving the factory surroundings, etc. He threw out some good hints to the farmers present about the word "practical," showed how, as a "practical" butter maker he had pooh-poohed "theoretical" ideas as he called them, until he suddenly found he did not know all about the subject and what he thought was theoretical was practical, and thus it was too often with the farmers. His remarks were interspersed with humor and were well received. Mr. Wheaton followed, on care of milk for cheese-making by the patrons, touched on germ life, giving importance of cleanliness in the dairy work.

The evening meeting was held in the Lyceum, which was fairly well filled, there being about 500 present. Mayor Smith occupied the chair. Mr. Leitch was the first speaker, and undertook to show how any farmer could raise $1,000 on a hundred acres:

10 cows, making $40 each	$400 00
Pigs	200 00
10 acres of wheat	100 00
2 cows, old, fattened	100 00
Orchard	100 00
Potatoes	50 00
Hens	50 00

He advised concentration of energies and advocated dairying. J. W. Wheaton followed him on "Dairying for Profit." He pointed out the advantages of cheese-making and dairying generally, giving instances where patrons of the cheese factories had done well, and showing the largest and smallest amounts paid its patrons per cow in any factory. He advised the giving of more attention to breeding and feeding, to care in handling of milk and to little things, as noise, disturbances, etc., at milking time. As one woman said, she could always get 25 lb. more milk from a herd of 25 cows at a milking than her husband could. He closed with a few words advocating the extension of the working season into the winter.

I followed Mr. Wheaton, speaking on Fodder Corn and the Silo. A good discussion followed all the papers in the afternoon, but not so much so in the evening. Mr. Morgan strongly advocated the silo, as did also Mr. Leitch.

Mr. Monrad then followed on the "Individuality of the Cow, and How to Lower the Cost of Production." He pointed out the difference in cows due to their individuality, and gave his experience in developing a good dairy herd. He advised the testing, culling, selecting and more careful breeding of all our herds. The bull was half the herd, therefore get the best. A good discussion followed.

St. Thomas. The meeting at St. Thomas was not as largely attended as the one at Strathroy, still we had a most lively meeting. Mr. Patullo, Prof. Dean, and Mr. W. C. Shearer of Bright were present. Mr. Patullo occupied the chair. Mr. Wheaton spoke first, a few words on the good work the association was doing The subject of fodder corn and silo was introduced by myself and a most lively discussion followed. One old gentlemen present would not be convinced that there was any use in putting corn in the silo; it was just as good shocked in the field, and left there until wanted for feeding. He did not believe that cows liked it anyway, etc. His objections had the effect of breaking all the stiffness of the meeting, and brought out a much fuller discussion.

Mr. W. C. Shearer, of Bright, was then introduced by the president as a man who had made a success of dairying. He was first aroused to do better by hearing ex-Gov. Hoard talk on the dairy cow. Mr. Shearer gave us his experience. He keeps fourteen Jersey grades. They commence their milking seasons from September to November. In the fall he feeds corn to supplement pastures. The cows are always milked in the stables, and cows are kept there cold, wet days and nights. Winter feed is mainly ensilage, with some grain. He lays great stress on regularity in feeding and milking, and in fact in all his work. He turns to grass slowly, and feeds a little grain for a week or two after out at pasture, then drops to a handful or so in their mangers as they come into the stable. Soiling crops are sown, and fed where necessary. His proceeds are: $85 per cow for butter, as he has a cream separator and makes butter; $10 per cow for skim-milk fed to the hogs, as the profit in feeding them after deducting cost of meal, etc., leaves that for his skim-milk; $10 per cow for calf, as he has been able to sell all his calves, both bull and heifer, for over that sum. Total receipts, $105 per cow.

Mr. Monrad was the next speaker, and his address was practically the same as he gave in the afternoon at Strathroy.

Prof. Dean spoke next on "Dairy Farming," pointing out the opening there was along that line for good men, showing the requirements and advantages of co-operative work in dairying, and closing with a few words about winter dairying. He dealt with some of the objections raised against it, and showing from their work at Guelph how these had been overcome.

A lively discussion followed, and many questions were asked, from the standard of milk or butter yield of a cow to carrying the whey back in the milk cans from the cheese factory.

Mr. J. S. Pearce opened the evening meeting on "The Butter Outlook and its Future." He gave figures showing the rapid increase of butter exported from Victoria, Australia, the increased amount as exported by Denmark, and the increased consumption of butter and cheese in England. He pointed out the increased consumption that would arise if all the butter made at home was of a first-class nature, and said that the time was coming when there would be no such thing as dairy butter. The prospect he thought full of hope.

The care of milk was then taken up by Mr. Wheaton, similarly to what he said at Strathroy.

Mr. Monrad was next introduced and spoke on the "Individuality of the Cow." He stated that in a recent Australian paper he saw the statement that though they were shipping so much butter the farmer was only getting 53c. a 100 lbs. When the Danes first went into dairying they were afraid they could not raise as much wheat and barley as they were doing, but to-day he found them raising the same quantity of grain on one-third less land. He gave examples of the cost of producing a pound of butter from the Minnesota Station herd, the lowest being 8 4-10 to 14 6-10 cents per pound, while Denmark's was, from a splendid herd of 36 cows, 12 6-10 to 29 7-10. He wished lightning would strike one-third the cows of the country, if it would only strike the right ones.

Prof. Dean was the speaker of the evening. He endeavored to show the relation between a dollar bill and the cow, being a practical talk on selecting cows and handling their product, and in closing he pointed out the food values of the dairy foods.

President Patullo spoke on "Good Roads," which closed the meeting, which was a better one than the Strathroy one in interest but not in numbers.

Simcoe. This meeting was held on February 21st—Mayor Atkinson occupied the chair. The proceedings began with a very poor attendance, on account of the storm of the night before, but before the session was through the hall was almost filled. "Fodder Corn and the Silo" was the first subject up for discussion, and at the close of my remarks a good discussion came on. Questions were asked about round silos. Mr. Edmunds said he had built a round one in his barn. It was 18 feet in diameter and 18 feet deep. The sides were only 1¼ inch matched flooring, held together by eight hoops of band iron, 2 by ⅛ inches thick. It was the cheapest he could build, and it saved well, for there was no waste. The foundation was of stone, the boards set on end on this and backed a little at the bottom on the outside. He found he had made a mistake in building it so wide, he thought 12 feet would have been better. Another man added his experience. He built a square one, but instead of putting in heavy sills as is usually recommended he simply put down plank then filled in around the bottom of the studs to the depth of about 8 to 10 inches with cement. He thought he had a good job, it had stood one year all right. Objection was raised to it on account of expense.

Mr. W. C. Shearer spoke next, giving his experience in dairying and the result of his work in 1894.

Mr. Monrad followed, speaking on winter dairying and butter-making. In ripening cream he advised it to be kept sweet until 24 hours before churning, then stir into the cream a starter, and let it stand at a temperature of 70° for the 24 hours, when it will be ripened. It is the better of an occasional stirring. To make a good starter, 48 hours before churning take some skim-milk from a fresh cow, heat in a small vessel to a temperature between 85 and 90°, and place the vessel in some place that will help it retain its heat, yet where it will be free from all odor. He suggested placing the small vessel in a box a little larger than itself, then packing around it hay, press it in so firm that the vessel can be lifted out and replaced again without disturbing the packing. This will help to retain the heat when covered over. A similar one could be made for the cream and greatly aid in keeping the cream warm, and thus ensure it being ripe at the proper time. The amount of starter should be about 5 per cent. of the amount of cream to be churned.

Prof. Dean was the last speaker on the programme, and spoke on "Some New Features of Dairying." He exhibited a chart giving the constituents of milk, and explained how they were derived from the food, and from what portions of the food so far as is known. In speaking of the fat of the milk he said it came from the protein of the food and not from the fat, that the per cent. of fat was not influenced by the feed, and that "slop" had not the effect usually attributed to it, *i e.*, of increasing the yield; in their experience at the dairy it had decreased the amount of milk.

His worship the mayor occupied the chair again in the evening.

Mr. J. S. Pearce spoke on "The Future Outlook for Butter and Cheese." He said it was hopeful and full of promise.

Mr. Wheaton followed on the care of milk.

Prof. Dean, to whom was given the greater portion of the time, continued his talk from the afternoon. He showed that it was the farmer's place to produce good raw material, and then instanced the many ways in which it can be spoiled before it reaches the factory.

The question of paying for the milk was then taken up.

1. The pooling system.
2. The plan of paying according to percentage of fat.
3. The plan of paying according to percentage of fat and plus casein.

Mr. J. H. Monrad spoke on "Co-operation," showing what it had done in many places and in many ways, urged more of it, extend it more thoroughly into all our work, as, for instance, the cheese factories of a certain district appoint only one salesman on the boards to dispose of all their cheese. This would mean that these factories would need to be under one cheese-maker, who would have full control in each factory, but the bulk of the work would be carried on by competent men, and he would visit from factory to factory. A few words on the "Future Farmer" brought the meeting to a close.

Harriston. A fairly well filled hall greeted us when the meeting opened in the afternoon of February 27th. Mr. Wheaton occupied the chair *pro tem.* Mr. A. F. McLaren came in later and took his place. "Fodder Corn and the Silo" came up for a thrashing out, and a very good discussion followed the address. It is a subject that all seem more or less interested in, and one in which so many are not posted in spite of all that has been written and spoken during the last five or six years. It is a question I think we cannot be too plain about or speak too often on in these days of keen competition. Mr. Monrad gave an interesting talk on dairy subjects, dwelling on that word "practical," and giving some very amusing instances of it. He was once in a butter factory in Nebraska while the butter-maker was churning. An old lady was present watching the operations with a very critical eye. When the butter had gathered in nice granules the churn was stopped, much to the astonishment of the old lady. "Why," she says, "I can do better than that; I can churn it into a lump." Later in the day when Monrad talked about a cream ripener, the butter-maker was astonished and looked incredulous; and so it was through life, what comes within the range of our experience, etc., we deem practical. New ideas, etc., are called theory, even if practical elsewhere.

Mr. Robert Cleland, Listowel, gave some good ideas regarding dairying, and some not so good. He advocated good stables as essential in dairying, and also good cows, and to raise them rather than buy, as he had found the latter very unsatisfactory. This must be backed with good feeding—green feed for summer feeding and corn for silo. He advocated feeding turnips, and sat as strongly as he could on winter dairying, and such "bosh" as weighing the milk of the different cows and testing them. Average them, he said. He gave us the returns from sixteen of the patrons of his cheese factory. They were good, and averaged well with the 100 acres that supported them, but he said nothing about how many cows it took to make these returns, or whether there was a cow in the whole lot that paid for her feed. He advocated good care of manure, spreading on fields as made, and the adoption of a suitable rotation, and care of implements. He also advocated keeping of hogs. He paid by the Babcock test for fat in his factory. The first year there was considerable dissatisfaction, but the second year none. As it was time to close no criticism was offered, but it was heard all right enough among the people, and during the evening a number of points were corrected.

Mayor Wait occupied the chair in the evening. Mr. A. F. McLaren, Vice-President of the Western Dairymen's Association opened with a few thoughts from a cheese-buyer's standpoint, dwelling especially on clean factories, utensils, etc., and clean men. The amount of dirt there was allowed around some factories was more than he could stand, and always meant less for the cheese. He spoke of the success at the World's Fair. He also spoke of the style and size of cheese, and a number of the little things that go to make things sell better. "Little Things in Dairying" was the subject of Mr. Wheaton's remarks. He thought we often overlooked the little things in the pursuit of the large ones, and went on to show how some of these little things had a most important influence in dairying. He then worked into the subject of bacteriology, and its relation to dairying.

The "Individuality of the Cow" was Mr. Monrad's subject. He showed that upon it hinged very largely the success of the cow—in fact the success of dairying. He quoted from Prof. T. L. Haecker, of Minnesota, showing what had been done at the station there in building up a good herd of cows, whose butter average was 377 pounds per cow. Charts were shown at the close of his address by myself, showing the manurial and feeding value of the most common foods on the farm, and further illustrating and explaining certain points of his address. The meeting was a very successful one, considering the state of the roads.

Flesherton. This meeting was held on February 28th. Despite the bad roads the afternoon meeting was well attended, although opening late. At the evening meeting the hall was full to overflowing.

As I was leaving on the 4.45 train I spoke first, and took up "Fodder Corn and the Silo." The discussion that followed was one of the best we have had on that subject. A number present gave their experience in growing corn and filling a silo, and I think considerable interest was aroused on the subject.

Besides these, Mr. Harcourt conducted meetings at Pond Mills, Middlesex Co., and reports as follows: In spite of the storm there was a very good attendance at Pond Mills. I was surprised at the number present, about 50, in the afternoon. The president, Mr. T. Baty, and Mr. J. D. Thompson, gave reports on the Central Farmers' Institute. Mr. Baty then gave a talk on the subject of "Roots *vs.* Corn," taking the side of roots. As the man who was to introduce the corn side of the question was not present, I took up the defence to a certain extent, and endeavored to show that a ton of good corn ensilage had nearly twice the feeding value of a ton of turnips, and that given the same cultivation nearly as many tons can be raised. Of course this is not applicable to all parts of Ontario, as the corn does not do equally as well, and in some sections roots do exceedingly well. I then gave a short talk on the manurial value of the different farm crops, explaining that the animals got the value of the starch, sugar, fat and albuminoids of the food, yet returned at least 80 per cent. of the manurial value in the manure, as that lay in the ash and the nitrogen of the albuminoids. I then took up the subject of stock breeding, dwelling upon some points too often overlooked by farmers.

(1) The influence of first service upon subsequent ones, especially where heifers begin the milking season at about 24 to 30 months and are served by any bull because the calves are not generally raised.

(2) The influence of surroundings at time of service.

(3) Scrub sires, half-bred.

(4) An ideal, an aim for which to work.

(5) Careful selection, etc., to attain that aim.

Mr. J. D. Thompson gave a paper on "The Care and Management of Farmyard Manure." A good discussion followed this paper especially on the practice of spreading manure on the fields in winter, some condemning it, but most advocating it. At the evening meeting the schoolhouse was full. Mr. Scott, of London township, was the first speaker on "Farming as We See It." His address was taken up with the comparison of how different the work is now to what it was twenty-five or so years ago. He closed with a plea for better education for the farmers' boys. Mr. O. M. Simmons, of Ivan, spoke on dairying, being a humorous speech in favor of that line of work on the farm. I spoke on "The Care of Milk," and "The Future Farmer."

On the 12th and 14th of March, a series of meetings were held in North Bruce, a report of which I have not yet received.

REPORT BY MR. THOMAS McMILLAN.

Mr. Thos. McMillan and Mr. R. J. Potter addressed a series of meetings in North and South Ontario, commencing February 25th and continuing until March 6th. At the close of these Mr. McMillan proceeded to West Huron. He reports as follows :

Whitby. We had a hundred or more farmers present in the afternoon, and fully as many in the evening, although only three or four ladies were present. The meeting was opened by Mr. Lick, the president, who gave a synopsis of the proceedings at the Central Institute meeting, in which he recommended the abolition of that institution. Mr. Potter was called upon and addressed the audience upon "Co-operative Dairying," followed by Mr. R. H. Sawder, of Whitby, upon the advisability of farmers going largely into the growing of sugar beets, such as engages the attention of German and French agriculturists to a considerable degree. After endeavoring to show that this would be a profitable business, he stated that without a certain measure of protection by the Government we would never be able to establish such an industry, and he advocated the advisability of farmers seeking such protection. As a discussion upon this question would have savored somewhat of a political nature, the subject of "Breeding and Feeding Cattle" was introduced by myself directly at the close of his remarks. In the evening Mr. Potter led off with "Cheap Fodder and How to Grow it," embracing corn growing and the silo, followed by an excellent address by Mrs. J. S. Smith, of Whitby, upon "Our Boys and How Shall we Educate and Influence Them so as to Keep Them on the Farm." Then came myself, "Making Our way in Life," followed by Mr. J. E. Farwell, Crown Attorney, Whitby, with some general remarks of an interesting nature which brought an interesting day's proceedings to a close. We had good discussions in the afternoon.

Columbus, Feb. 26th. The meeting opened at 1.30 p.m. with about 35 or 40 live farmers present. After a general introduction by the chairman there was a good discussion on "Destruction of Weed Seeds in Connection with the Application of Manure," after which the "Breeding and Feeding of Cattle" was again introduced and discussed at considerable length by the audience, amongst whom were Mr. Wm. Smith, M.P., who expressed himself in an interesting and practical manner. Then came Mr. Potter upon "General Farming Upon Lines That Pay," followed by Mr. Wm. Radcliffe with an address upon "Cleaning Our Land," and closed by myself upon "Cultivation of the Soil." No ladies were in attendance.

Myrtle, Feb. 27th. Not a large meeting, but a most interesting one. Papers were given by R. J. Potter upon "Co-operative Dairying," by myself upon "Cattle Feeding," and by Mr. Elmer Lick upon "Clover Growing," each address eliciting an interesting discussion. In the evening there was a fair attendance. A general address by the president, Mr. Potter, on "Cheap Fodder," a talk by myself, and an interesting paper by Mrs. Rogers upon "Our Ideal Home and How to Reach it," comprised the programme. All went home apparently pleased with what they had heard.

Port Perry. This meeting was not so successful. Mr. Joseph Gould, of Uxbridge, gave an address at each session, besides Mr. Potter and myself.

We next visited *Brechin* where we were met by a large number of farmers who were much interested in the discussions. We had a full house at night and had a splendid meeting, but no local papers.

Cannington. We had a mixed audience of fully fifty, and had a most interesting session. In the evening we had a fair assemblage, a portion of which were from the village. Besides Mr. Potter and myself, Mr. Henry Glendinning addressed the meeting for a short time upon "Fruit Culture."

Goodwood. The following Monday we had a very rough, stormy day, yet the sessions were conducted.

Claremont. About thirty intelligent farmers gathered during the course of the afternoon, when we spent an hour or two in an interesting and beneficial manner. About an equal number put in an appearance in the evening. These meetings had not been well advertised.

Cherrywood. This meeting was pretty well advertised, and but for three deaths in the neighborhood we would likely have had a crowded house. As it was we had two very good sessions. There was no local talent engaged in the afternoon, but Mr. Wilson, an ex-student of the Agricultural College, in the evening gave us an address upon "The Requirements of Plants," dealing with the uses of artificial manure. This meeting completed this series in Ontario county.

In most sections there is a lack of thorough advertising. This generally happens in the places where the work is left to a director in that immediate neighborhood who has not taken sufficient interest. I consider both the presidents and secretaries of North and South Ontario good men, and advertising was fairly well done in their immediate vicinity. Upon leaving Ontario county, I went at once to the West Huron meeting at St. Helens. Considering the stormy day we had a good meeting, the first in this vicinity, and many expressed themselves as highly pleased with the addresses and discussions.

The officers of local institutes should be strongly urged to secure, if possible, more local talent, as in every section farmers are disposed to listen rather than take a hand.

REPORT OF MR. T. G. RAYNOR.

Our meetings were held in North Lanark, Lennox, Hastings, Northumberland—East and West, East Peterboro' and Prince Edward.

A supplementary meeting of the farmers' institute was held in North Lanark, on February 14th. As some years had elapsed since a meeting of the institute had been held at Carleton Place, it was selected this time.

Carleton Place. Both afternoon and evening sessions were well attended, over four hundred being present at the latter.

The meeting had been well advertised, and a good programme was provided. The speakers were C. C. Gilbert, Poultry Expert at the Dominion Experimental Farm, Ottawa; A. A. Wright, President of the Renfrew Creamery; M. K. Evertts, Easton's Corners; A. J. Ferguson, B.S.A., Perth; Joseph Yuill and A. R. Yuill, of Carleton Place, and T. G. Raynor, B.S.A., of Rose Hall. A lively interest was manifested by those present and the membership of the institute was increased by forty-seven.

Odessa. At Odessa, in Lennox county, on February 18th, a series of special meetings was opened, and a deputation consisting of T. G. Raynor, B.S.A., and Alexander R. Yuill was appointed to visit a number of these meetings. Both of these gentlemen received a course of training at the Ontario Agricultural College, Guelph, and both are practical farmers. The attendance at the Odessa meeting was not large, due partly to the lack of advertising.

Selby. The second meeeting in Lennox was held at Selby on the 19th of February. It was much like the Odessa meeting. A lively interest was taken in the proceedings by those present.

Belleville. The recently reorganized institute of West Hastings held its first meeting at Belleville on the 20th. Notwithstanding the efforts of a good live president, in the person of R. J. Graham, Belleville proved to be too large a place at which to hold a successful meeting. A good programme was provided, and the deputation was aided by Mr. Alfred Brown, of Prince Edward county, who gave an address at the evening meeting. Twenty joined the institute.

Plainfield, in East Hastings, was the next place visited by the delegation, on the 21st. They were accompanied by R. J. Graham, President of West Hastings Farmers' Institute, who also took part in the meetings. The farmers around Plainfield are largely engaged in dairying, and this proved a good point for institute meetings, as they were attended by large numbers of interested farmers. Thirty-seven joined the institute.

Tweed. On the 22nd, the second meeting was held in the same riding. A good afternoon session was conducted. Thirty-seven more members were procured here. East Hastings Institute is well officered and in a good, prosperous condition.

Madoc. From Tweed we went to Madoc on the 23rd, where the institute for North Hastings was recently organized. The officers managed the meeting well for beginners, and two interesting sessions were held at this point, which proved very interesting, and Mr. A. F. Wood, ex-M.P.P., contributed his quota to the proceedings. Seventeen names were added to the list of membership.

Springbrook. The second meeting for the riding was held at Springbrook on the 25th. This proved to be a good point at which to hold such meetings—even better than Madoc. The afternoon session, though well attended, was excelled in the evening, when a mixed audience was present and a varied programme rendered. Mr. James Whitton, of Wellman's Corners, contributed much to the success of the meetings. Seventeen members were added to the list.

Frankford. The second meeting for West Hastings was held in this village on the 26th. It was a very successful meeting, both in point of attendance and the interest taken in it. It will be a good place at which to hold meetings in future. Twenty-five became members of the institute.

Wooler always proves a good point at which to hold institute meetings. It was visited on the 27th inst., and the delegation was accompanied by R. J. Graham, who was one of the speakers. Both sessions were well attended, especially the evening one, at which over 350 were present. Thirty members were obtained.

Campbellford. The second meeting for East Northumberland was held at this point on the 28th.

Roseneath. The following day, March 1, a meeting was held here in West Northumberland, the delegation consisting of Mr. J. B. Ewing, of Dartford, and myself. Such a meeting was a new thing to most of the people of this locality. The sessions were well attended and proved interesting. Twenty-nine farmers joined the institute.

Baltimore. The following day, Baltimore, in the same riding, was visited by the same delegation. Being near to Cobourg, and market day, interfered with the afternoon session, but the hall was crowded in the evening. Twenty names were added to the list of members. Mr. R. Cullis, the secretary-treasurer, said the institute was never in so flourishing a condition as now.

Hillier. On March 4th, Mr. A. R. Yuill and myself visited Hillier, in Prince Edward county. The day proved such a stormy one that there was a very small attendance. Ten joined the institute.

Picton. Next day the same delegation attended the Picton meeting. A short session was held in the morning. In the afternoon quite a number of the farmers were out and a very profitable and interesting session was held. Twenty new members joined.

Waupoos. A third meeting in Prince Edward was held at Waupoos on the 6th. Quite a number attended and a profitable time was spent. Twenty-two names were secured.

Bath. March 7th was the date fixed for this point in Lennox. The deputation was greatly aided by Mr. Zufelt, of the Dairy School, Kingston, who spoke on butter-making.

Stella. March 8th found the same deputation on Amherst Island. Mr. Filson, the president, had spared no pains to hold a successful meeting. The sessions were fairly well attended, and a sufficient number became members to roll up their membership over fifty, enough to constitute the municipality of Amherst Island an institute by itself.

Westwood. The first meeting for East Peterboro' was held here on the 12th. It was quite evident that the farmers of this riding are alive to their interests. Probably to Mr. F. Birdsall, the president, much of the success of the institute is due, as he has spent considerable time and money in its behalf. I was the only regular delegate present, but the president of East Northumberland institute, Mr. R. Honey, and Mr. J. B. Ewing rendered valuable assistance at both sessions.

At Warsaw the second meeting of the riding was held. The sessions were well attended and a number of local men read papers. A good programme of music, etc., was rendered at the evening session and everybody seemed well pleased. A considerable addition to the membership was obtained.

Besides the meetings above reported, the following gentlemen addressed supplementary meetings:

J. N. Chambers, in West Wellington and other points.

Prof. Dean, at Mount Forest, Millbank, Shakespeare, Alvinston, Sarnia, Windsor, Beachburg, Kincardine and other points.

R. F. Holtermann, at Fisherville, Byron, Teeswater and Holyrood.

John I. Hobson, in East Wellington at Mount Forest, Galt, Ayr, Strasburg, and a series in East Durham and other points.

Wm. Houston, M.A., at Shakespeare and other points.

A. P. Ketchen, at Strasburg and Ayr.

David McCrae addressed a series of meetings in North Lanark and a meeting at New Dundee.

James McEwing, a series in North Perth and South Waterloo.

D. E. Smith, B.A., at Millbank and Rockton.

C. A. Zavitz, B. S. A., a series in North Perth.

In addition to the meetings here specified, many have been held by local talent. At these gatherings addresses were delivered or papers read, upwards of 95 per cent. of which were prepared and delivered by practical persons who have made a success of the business they discussed.

APPENDIX.

ELECTORAL DISTRICT FARMERS' INSTITUTES.

SELECTED PAPERS READ AT JANUARY MEETINGS, 1895.

AGRICULTURAL DEPARTMENT.

ORIGIN AND FORMATION OF ONTARIO SOIL.

By J. Hoyes Panton, M.A., F.G.S., Professor of Natural History and Geology, Ontario Agricultural College.

A Vertical Section of Ontario Soil.

If we examine a vertical section of soil in any part of the Province it will present the following characters:

1st. Certain large stones, hard and more or less crystalline, some of a salmon color, some greenish, others a mixture of black and white, and in many cases the material will be arranged in layers.

If quarries are near, the rock is not at all of the same nature as the large, hard, round stones already referred to, and which for convenience we will call *foreign boulders.* These we shall show have been brought here in ages long past and lie by our roadsides and in our fence corners, silent monuments of thrilling scenes that happened in the so-called "ice age."

2nd. Other large, loose stones of a much softer nature appear, but they resemble the rocks of the quarries, if such are in the vicinity. These are not so much rounded. We shall call them *local boulders* for they have not been transported so far as the preceding.

3rd. Scattered throughout the loose earth we observe the remains of decomposed plants that have flourished from time to time upon the soil in which they are now found. These form the *humus* of the soil.

4th. Our ideal section will also show ground-up rock, usually called soil.

5th. Beneath all is a floor of rock. Our section thus shows five constituents, *foreign boulders, local boulders, humus* (organic matter), *soil* (pulverized rock) and a *solid floor* of rock. From this it is readily seen that the composition of soil largely depends upon the nature of the rocks below it and upon those at a distance (in Ontario those lying to the north) because, as we shall see later on, much material was transported from the north during the ice age. We shall now consider the nature of the rocks that underlie our Province and the regions north of it.

The Rocky Floor of Ontario.

1st. A district embracing that portion of the Province extending from near the junction of the Ottawa and St. Lawrence rivers to Morrisburg, and north to the Ottawa. This is largely underlaid by rocks of the Cambrian system, in which there is much sandstone, some limestone and slate.

2nd. This area extends from Morrisburg to Kingston and continues in a northwesterly direction beyond the limits of the Province, widening as it passes north. This is the Laurentian system—the great mineral area of Canada. In many places rock is bare, yet this district possesses rocks which, when decomposed, supply some of the most valuable constituents in soil. Here we find much felspar, consisting of clay, silica and potash, which it contributes to the soil on disintegration; Apatite, the source of phosphoric acid and other deposits of great importance in soil formation. Thus in this apparently barren area we have rocks which in time break up and supply valuable constituents to the soil, such as phosphoric acid, potash, soda, lime, magnesia, sulphur, clay and sand.

3rd. The area extending from Kingston to a little west of Toronto, known as the Cambro-Silurian system, contains vast beds of limestone.

4th. A district from near Toronto to Baden, on the G.T.R., consists of Silurian rocks largely made up of dolomite, containing both magnesia and lime.

5th. From Baden to the western boundary of the Province includes Devonian rocks, composed of limestone and clay deposits. We have thus six systems represented in Ontario: 1, Laurentian; 2, Huronian (around lake Huron and much the same as No. 1); 3, Cambrian; 4, Cambro-Silurian; 5, Silurian; 6, Devonian. At No. 6 the geological records closed, as far as Ontario was concerned, until they reopened at No. 15 (Pleistocene). It is remarkable that, as far as deposits are concerned, we received none from No. 6 to No. 15.

Other places received great additions, such as the coal beds, chalk and other deposits of great thickness, while Ontario received none. Since nearly all rocks are found under water, it is likely our country was, during this vast period of time, high and dry and thus beyond the influence of the sea.

However, great changes were going on, and the surface of the Province was considerably modified from the action of agents which we shall now consider.

Disintegrating Agents.

Disintegrating agents, *i.e.*, agents breaking up rocks. These acted upon the solid floor of Ontario during vast periods of time.

(1) *Air*, in the presence of moisture, has a great influence upon rocks, especially if iron is in them, and this is a common ingredient among the older rocks. You often notice by the wayside boulders with stains upon them. These result from the action of the air upon the iron in the stone. It will only be a matter of time before it is dissolved and crumbles to pieces. The element oxygen, a constituent of air, has a great tendency to unite with other elements, and hence its destructive effects upon many rocks. Consequently the simple action of the air in the long ages between the Devonian and Pleistocene periods would no doubt do much in breaking up the rocks upon which it acted.

(2) *Water*, especially in the form of rain, beating upon the rocks during this long period, would exert a wonderful influence upon the rock surface in two ways, viz., mechanical and chemical. The former needs no explanation, for it is readily seen how rain would act, as we see it to-day, by distributing the ground up rock and wearing away, by mechanical action, the surface over which it flowed. But there is another way in which it can act very forcibly, especially when it contains carbonic acid, which is present in the atmosphere. When this carbonic acid and rainwater come in contact with rocks, especially such as contain lime, magnesia and iron, they form with them compounds soluble in water, and thus break up the rock in which they are formed. This solvent action of water explains why it is always more or less charged with mineral substances, producing hard water. Many caves, especially those found in limestone, have been formed by the solvent action of water, and the beautiful icicle-like structures in them have been deposited from water, drop by drop. The Mammoth Cave of Kentucky has 223 avenues, representing 150 miles. The average height and width of these passages is 21 feet. The amount of limestone removed is said to be equivalent to 12,000,000 cubic yards. This to a great extent is the result of the solvent action of water. Rain charged with carbonic acid during long ages would certainly act so as to disintegrate the limestone floor of Ontario. See its effect upon the marble tombstones in a graveyard, and observe how it corrodes the limestone of the field, so that we readily distinguish them by their weathered appearance.

(3) *Plants*, as soon as they appeared, would exert an influence upon the surface while living, the tender roots penetrating the soil would feed upon the minute particles

and dissolve those near them, and when they decayed, channels would be left for rain to pass into the soil, and the decomposing plants would supply carbonic acid, which would aid in the work of disintegration.

(4) *Animals*, especially such as burrowed, would open up the way for air and rain to enter the soil. Few animals are credited with more influence in the breaking up of soil than the common earthworm. From extensive experiments by Darwin it has been discovered that in some places worms add one-fifth of an inch of mould yearly to the soil, or at the rate of 16 tons to the acre derived from deposits they leave upon the surface. Besides this their burrows form passages for air and rain to act upon the rock material exposed.

(5) *Frost*, while it existed, would be a powerful agent. We see how it breaks down the rocky banks of rivers and sculptures the mountains. Much of the rock lying at the base of mountain cliffs and steep banks is the result of frost.

Now the more we consider these five agents, air, rain, plants, animals and frosts, the more we will be convinced of their disintegrating effect, especially when we think of the vast period of time elapsing from the close of the geological record (Devonian, or No. 6) in Ontario until they were reopened for deposits in the Pleistocene clays (No. 15). This gap, as already noticed, embraced eight periods, each of which may have been thousands of years in duration ; yet in that time the rock surface was undergoing changes that must have prepared great deposits of finely divided rock. However, this soil would be largely localized, being much of the same nature as the rock below it ; but when the Pleistocene period arrived, the Ice Age appeared, and was destined to mingle this pulverized rock in a most marvellous manner. In order to understand this more fully let us examine some things going on now in countries where mountains are found with snow-capped summits throughout the whole year, and from these phenomena draw some conclusions regarding the state of affairs in Ontario during the Ice Age, claimed by some writers to have lasted 160,000 years.

Ice Age.

The Ice Age, the period during which enormous quantities of rock material were ground up and mixed with soil formed previous to its appearance. In countries where mountains are high above the level of the sea, a line of perpetual snow is formed, and ice keeps accumulating throughout the year. In time the mass becomes so great that it can no longer remain upon the mountain top, but begins to descend. If the slope is steep, the descent is rapid, and the mass of ice is known as an avalanche, which moves with tremendous force into the valley below.

But if the descent is gradual, then the ice moves slowly towards the lower country and forms an ice river (a glacier), sometimes miles long and hundreds of feet thick. It glides onward, sometimes at a slow rate—only a few inches each day—yet it moves, and what seems very remarkable, moves more rapidly in the centre than on the sides. This has been shown by putting stakes in the glacier and along the sides. In the course of time they assumed a V shape, indicating that those in the centre have made more progress than those at the side. In the course of its journey fragments of rock are constantly falling upon the glacier. If cracks (crevasses) occur in the rock, which is quite a common thing, the rock drops into them and becomes imbedded in the ice. In cases where some reach the bottom one can readily understand what a grinding effect these imbedded rocks will have upon the rocks below. Thus a glacier becomes a tremendous agent in grinding up rock. This river of ice will continue gliding on until it reaches a point at which the temperature is sufficient to melt it, and then it becomes the source of a river. If it is a very warm season, the glacier is not so long, and an opportunity is offered to see how things appear where the glacier was the season before. The solid rock is smoothed, polished and covered with markings running in the direction from which the glacier came, and the boulders lying about are rounded. Now, if the glacier reaches the sea before it melts, a portion of it breaks off and moves away all the rock material in it, and will be deposited where it finally melts. This is what occurs yearly along the coast of Labrador and Newfoundland, where so many icebergs strand at certain seasons. Now, if an elevation of the sea bottom here took place we would find it covered with great boulders, not the same as the rocks along the shore, but like those in Greenland, whence the icebergs came.

The question naturally arises now, is it possible that such conditons have ever been in this part of the world ? We are forced to admit such is the case to some extent, when we consider the following facts :

1. Boulders are found all over our Province. These are not at all the same kind of rock as the stones of quarries near by, but strongly resemble the rocks lying to the north and east of us.

2. These boulders are not found much south of the 39° north latitude, that is a little south of Lake Erie. They extend in an irregular manner as far as Cincinnati. Foreign boulders can be seen almost anywhere north of this limit, which strongly resemble in their distribution the boulders in districts now undergoing the grinding influence of glaciers.

3. In many parts of Ontario, where a rock surface is exposed, the rock is abraded and polished, and entirely covered sometimes by peculiar markings (striæ of geologists). These have a more or less uniform direction (northerly), which indicates the glacier came chiefly from the north.

It is difficult to account for these foreign boulders and the smooth, polished, scratched rocks below, extending only so far south, unless we imagine the same condition we see now in other parts of the world where glaciers and icebergs are found.

Then, too, we find the arrangement of our clay, gravel and boulders is similar to that where glaciers are to-day. In Western Ontario our clay-beds lie to the south. In Artemesia, north of these, are great stretches of gravel ; and still further north are extensive areas covered with boulders. No better explanation to account for this state of affairs can be given than the presence of a glacial period in Ontario—a time when the northern part of our continent was more elevated and became the starting-point of glaciers that made their way southward until regions were reached where they melted, leaving the boulders of our wayside as silent monuments of that period in geological history. It is an open question to what extent these phenomena are due to the action of glaciers and icebergs. Some attribute them entirely to glaciers, while others consider them partly due to iceberg action.

In regard to the duration of the glacial period, there is great diversity of opinion. No doubt it lasted for thousands of years. During this time immense quantities of rock were ground up and transported to the south of the starting point of the glaciers. At the close of this wonderful period it is supposed that all of our fresh water lakes were united, and formed a vast body of water which covered the entire Province. This would have a great influence in mixing up the soil that had been formed before the glaciers existed and that which had been prepared during that period. During this time the waters of this great lake found an exit by the Mississippi River. In time the waters began to subside, and Queenston Heights formed a shore line. The Niagara River existed before the glacial period, part of its course extended from the present whirlpool to St. David's, but this in course of time was filled up with glacial clays. When it began to flow again instead of keeping in its old bed it flowed down to Lewistown and poured its water into the subsiding lake. As this lake diminished, the fall increased and receded gradually until they reached the place we find them to-day.

The time required for gradual change in this position was once put at 35,000 years. More thorough investigation has led geologists to believe that it probably took only 10,000 to 15,000 years. It is doubtful at what period the waters found an outlet into the Atlantic Ocean. But shortly after this took place the physical features of Ontario began to assume their present outline, and this fair Province became fitted for man's abode. From what has been set forth in this lecture, we conclude that the soil of Ontario has been obtained from the disintegration of rock during the vast period of time extending from the 6th to the 15th system of the geological records ; the grinding action of ice, both as glaciers and icebergs, during the Ice Age, and what has resulted from a modification of the earth's crust since that time, together with the decomposed remains of plants and animals that have from time to time been added to it.

A tabulated statement showing the percentage composition of the most common rocks and minerals from which the ingredients of the soil are derived :

—	Silica.	Phos. acid.	Carb. acid.	Sulph. acid.	Alumina.	Potash.	Lime.	Soda.	Magnesia.	Iron.	Water.
Quartz	100	......	......	......	......	......	......	......	......	......	......
Felspar	55	......	......	......	18	17	......	12	......	......	......
Mica	47	......	......	......	40	10	......	......	......	3	......
Iron	......	......	......	......	......	......	......	......	......	100	......
Hornblende	50	......	......	......	10	......	12	2	18	8	......
Apatite	......	42	......	......	......	......	55	......	......	......	......
Serpentine	44	......	......	......	......	......	......	......	43	3	10
Chlorite	27	......	......	......	23	......	......	......	14	24	12
Gypsum	......	......	......	46	......	......	33	......	......	..	21
Limestone	......	......	44	......	......	......	56	......	......	......	......
Dolomite	......	......	46	......	......	......	52	......	22	......	......

Granite is composed of quartz, felspar and mica.
Trap varies is composition but usually contains much felspar.

THE BEST VARIETIES OF OATS, BARLEY, SPRING WHEAT, PEAS AND WINTER WHEAT FOR ONTARIO CONDITIONS.

By C. A. Zavitz, B.S.A., Guelph.

You may think I have taken a good deal upon myself, when I say that I intend to give you information regarding the best kinds of grain among the varieties which are grown in Ontario at the present time. What I am about to say to you is not simply my own-opinion, but the result of a great deal of very careful work, which extends over some five or six years. I think that all of you, as practical farmers, will agree with me that there is no better way of determining the best varieties of crops to grow upon our farms, than simply to obtain different varieties, and grow them side by side under similar conditions, and in this way have an actual experiment with the different varieties. Knowledge of farm work is based upon comparison. We are here at this institute meeting to compare different methods of cultivation, different classes of foods, different systems of farming, etc., in order to find out the best. The whole occupation of farming is more or less a system of experimental work. Agricultural experiments require much labor and expense, unless conducted in a systematic way. Realizing all these facts, the government started a small amount of experimental work in connection with the Agricultural College some eighteen years ago, where experiments could be conducted at one place for the benefit of all the farmers of Ontario; and, during the past seven or eight years, it has developed quite extensively. In the spring of 1889, all the varieties of farm crops, that could be obtained in this Province, were secured ; and also all the leading varieties from different countries of the world, which possessed a climate somewhat similar to that in Ontario. In this way some 400 varieties were obtained. These have all been grown upon our trial plots up to the year 1894. The average results for the six years show that we have been successful in obtaining foreign varieties of oats, barley, peas and spring wheat which surpass the very best Ontario varieties, but as yet no kinds of winter wheat have been imported from across the Atlantic which surpass those which are grown in Ontario or in some of the northern states.

Those who are here before me might say that it is all very well to find out which varieties of farm crop will give the best results at the Agricultural College at Guelph, but the results obtained there will not always apply to our various conditions in this locality. Realizing the importance of having the best varieties of farm crops tested all over the Province, a system of co-operative experiments was established in 1886, in connection with the Agricultural Experimental Union. During the first year there were only twelve experimenters; in 1887, there were sixty; in 1888, ninety; and since that time the number has gradually increased, until in 1894 no less than 1,340 ex-students and other farmers over Ontario were actually engaged in this experimental work. A few of the leading varieties of all kinds of farm crops are distributed annually to those who desire to receive them, and carry on a little experimental work. For instance, if a farmer wishes an experiment with oats, six of the best varieties, selected from the 149 kinds, which have been tested in our trial grounds, are sent to him. In these six varieties of oats are combined all, or nearly all, the characteristics of the oat class. For instance, we endeavor to send a tall oat and a short oat; an oat with a side head and one with a spreading head; an oat with a black grain and one with white grain; an early variety and a late variety, etc. In this way there is almost sure to be one or two varieties of oats which will do well in any locality. The same method is adapted in regard to each of the other classes of farm crops; and, during each of the past three years, from twelve to fourteen distinct experiments have been carried on over Ontario, and about 23,000 packages of material for these experiments have been sent to ex-students of the College and other farmers who wish to join in the work. The material has been sent to the experimenters free of charge, and the produce of the plots would of course become theirs; but, in return, full reports of carefully conducted experiments would be expected. I have placed upon these fourteen charts, which are here before you, the summary results of the fourteen co-operative experiments carried on over Ontario in 1894, and in some instances the average results for the past three years are given. As none but complete reports of carefully conducted experiments are included in these summaries, the results are of great value to the farmers of this Province. I will now call your attention for a time to those which refer to oats, barley, peas, spring wheat and winter wheat.

OATS.

As I mentioned before, we have been successful in obtaining foreign varieties of nearly all the classes of grain, which surpass the very best Ontario varieties in yield per acre. I wish now to direct your close attention to the marked success that we have had in our experiments with oats. Among seventy-nine varieties grown at the Agricultural College in the plots side by side for five years in succession, the thirteen varieties which gave the largest average yield per acre were all imported; the very best Ontario variety among the fourteen Ontario kinds tested standing fourteenth in the list in yield per acre. We are very glad that we have been so successful with this class of grain, as no farm crop in Ontario is grown so extensively as the oat unless it be hay and clover combined.

Variety of oats.	Number of years tested at the Agricultural College.	Where the Agricultural College obtained the varieties.	Average yield of grain per acre of 121 co-operative experiments conducted in 1894.
			Bush.
Siberian	6	Russia	48.7
Poland White	6	France	48.1
Joanette	6	France	47.7
Bavarian	6	Ontario	47.7
Lincoln	2	United States	46.9
White Schonen	4	United States	45.7

You will see that the Siberian oats, which were imported six years ago from Russia, stands at the head of the list, with an average of 48.7 bushels per acre. This variety possesses a long straw, a spreading head, and a white grain with a thin hull. The grain weighs on the average about thirty-six pounds per measured bushel. Not only does it stand at the head of the list among the six varieties tested in 121 different localities in 1894, but it also stood at the head of the list in yield per acre, among six varieties tested in 105 different localities in 1893, and also of the six varieties tested in 125 different localities in 1892. Among sixty-one varieties of white oats, tested at the Agricultural College, for five years in succession, the Siberian has given the largest average yield per acre. It is a variety better adapted to poor or average soils than almost any other kind.

The Poland White is the earliest oat on this list and possesses a straw medium in length. The head is spreading, and the grain short and thick, weighing on the average about 38 pounds per measured bushel. In some seasons the straw is apt to crinkle down slightly, which is perhaps the weakest characteristic of this variety.

The Joanette is a black oat, which we imported from France six years ago. It possesses the shortest straw of all our varieties, and is a great oat to stool, five pecks per acre of seed usually being a sufficient amount to sow. The grain has an exceedingly thin hull and weighs on the average about thirty-six pounds per measured bushel. Upon the rich soils of Ontario, this variety has given the largest yields per acre of all the varieties tested.

The Bavarian is a white oat with a spreading head. It was brought from Bavaria into New York state about seventeen years ago. After being grown there for six years, it was brought into Western Ontario, where it has been grown for the last eleven years with great satisfaction. As it has been grown in Ontario for that length of time, we now term it an Ontario variety, and, among all the Ontario varieties that we have grown at the Agricultural College during the past six years, the Bavarian has given the largest average yield per acre, but has been surpassed by thirteen imported varieties. It is, however, a good oat for an average soil.

The Lincoln variety has been grown at Guelph for only two years, but has been recommended very highly by many of the seedsmen of the Northern States and a few of those in Ontario.

The White Schonen is one of the leading varieties grown in some of the Northern States at the present time, but it stands the lowest of the six over Ontario in 1894.

Barley.

Within the last six years seventy-six varieties of barley have been tested at the Agricultural College. Of this number, thirty-seven varieties were grown upon plots side by side for five years in succession, and the average yield per acre for these years show that the eight leading varieties are all imported; the best Ontario variety coming ninth on the list.

Variety of barley.	Number of years tested at the Agricultural College.	Where the Agricultural College obtained the varieties.	Average yield of grain per acre of 28 co-operative experiments conducted in 1894.
			bush.
Mandscheuri	6	Russia	38.6
Black Hulless	5	Ontario	30.1
Kinna Kulla	6	Sweden	27.7
Duckbill	4	Ontario	27.3
Hungarian	5	Hungary	25.3

In the average of thirty-eight successful experiments with five varieties of barley carried on over Ontario in 1894, we notice that the Mandscheuri, which was imported from Russia six years ago, stands at the head of the list with an average of 38 6 bushels per acre. This makes three years in succession in which the Mandscheuri barley has given the largest yield of grain per acre among the leading varieties tested over Ontario.

It has also given the largest yield per acre among all the varieties tested at the Agricultural College during the past six years. It is a six-rowed variety, and possesses fairly strong straw with more than average length. The average weight per measured bushel has been 50¾ pounds.

The Black Hulless, which comes second in the table, is a variety which has been grown over Ontario for a number of years. It is usually a good yielder, but rather weak in the straw, and in unfavorable seasons the crop is apt to become completely lodged.

The Kinna Kulla, which was imported from Sweden six years ago, is one of our best two-rowed barleys. Among the fifty-three varieties that we have tested we have found none which are stiffer in the straw than this variety. When out in head it forms one of the prettiest crops that can be seen. The average weight per measured bushel for six years has been 51.6 pounds.

The Duckbill is also a two-rowed variety with which perhaps several of you are familiar, as it is one of the best two-rowed barleys which are grown over Ontario, being stiff in the straw and a fairly good yielder, but is not equal to Kinna Kulla in our experiments at Guelph.

The Hungarian is a white hulless variety. It stands the highest in yield per acre among six varieties of hulless barley which have been grown at the Agricultural College for five years in succession. It was sent out over Ontario in 1894 for the first time, and the table shows that it has not produced as large a yield per acre over Ontario as the Black Hulless. I think perhaps this order might be changed in other years. It possesses a longer straw than the Black Hulless, stands up much better and produces a beautiful white grain.

PEAS.

We have distributed peas over Ontario for only two years and we have sent out four varieties each season. We find that among all the spring grains that there is the greatest demand for oats and the second greatest for peas. We have here the average results of 63 successful experiments conducted in 1894.

Varieties of peas.	Number of years tested at the Agricultural College.	Where the Agricultural College obtained the varieties.	Average yield of grain per acre of 63 co-operative experiments conducted in 1894.
			bush.
Prussian Blue	5	Ontario	27.9
New Canadian Beauty	3	Ontario	27.4
Tall White Marrowfat	3	Ontario	26.7
Egyptian Mummy	4	Ontario	26.6

You will remember that I mentioned in the earlier part of my address that we had secured varieties of peas from foreign lands which had given better yields per acre than the best Ontario varieties. This is true in the case of two kinds, namely, Early Britain, from England, and the White Wonder from Australia, which head the list among all the varieties we have grown during the past four years. These varieties are followed by the Prussian Blue which you will notice by this chart has given the largest yield per acre among the four varieties distributed over Ontario in 1894. The straw of this variety is long and the peas are of medium size and of a blue color.

The New Canadian Beauty possesses the smallest straw of the four varieties represented on this chart. The grain is a beautiful round, white pea.

The Tall White Marrowfat produces a heavy straw, and has made an excellent record in our experimental trials at Guelph. The average weight per measured bushel of this variety for three years has been slightly over sixty-one pounds.

The Egyptian Mummy has been grown over Ontario for a number of years. It gave the heaviest straw per acre among the varieties tested over Ontario last year. The straw is of a coarse nature, but the grain is large and handsome.

SPRING WHEAT.

We have been quite successful in obtaining valuable varieties of spring wheat. You see before you the average results of nineteen co-operative experiments conducted over Ontario in 1894.

Varieties of spring wheat.	Number of years tested at Agricultural College.	Where the Agricultural College obtained the varieties.	Average yield of grain per acre. 19 co-operative experiments conducted in 1894.
			bush.
Herison Bearded	6	France	18.8
Hayne's Blue Stem	3	United States	17.7
Manitoulin	4	Quebec	17.0
Pringle's Champion	6	Germany	16.9
Red Fern	5	Ontario	16.7

The Herison Bearded which we imported from France six years ago stands at the head of the list with an average of 18.8 bushels per acre. This also stood at the head of the list in the co-operative experiments with spring wheat in 1893. It has also given the largest average yield per acre among 22 varieties of spring wheat grown at the Agricultural College for five years in succession. The straw of this variety is an average length and usually stands up well. The head is short and bearded and the grain is small and plump and of a red color. The Millers' Association chose this as one of nine first-class milling wheats among 57 varieties that were submitted to them for their inspection.

The Hayne's Blue Stem was obtained from the experiment station in North Dakota where it had given the best results among about 100 varieties grown for two years in succession at that place. Among all the varieties we have tested at the Agricultural College, this is one of the freest from rust. The crop usually stands up well. The head is bald and the grain is of a red color.

The Manitoulin usually stands up well and is comparatively free from rust. Several experimenters speak very highly of the Manitoulin variety.

The Pringle's Champion was another of the nine varieties chosen by the Millers' Association as a first-class milling wheat. It has given good satisfaction among the varieties grown at the Agricultural College.

The Red Fern has given the largest yield per acre among all the Ontario varieties that we have grown upon our trial grounds at Guelph, but over Ontario it stands at the bottom of the list in yield per acre for 1894, the imported varieties surpassing it over Ontario, as well as at the Agricultural College.

WINTER WHEAT.

Our experiments with winter wheat have been quite extensive, and we have here the average of 81 co-operative experiments carried on over Ontario in 1893-4:

All the varieties of winter wheat named in the table were obtained from United States and Canada. As we will have the report of another year's crop of winter wheat before the time for sowing these grains next autumn, I will draw your attention to only one variety, namely, the Dawson's Golden Chaff. This variety, you will notice, stands at the head of the list, and has given over three bushels per acre more than the next highest yield. Not only does Dawson's Golden Chaff stand at the head of the list in 1894, but it also stood at the head of the list in yield per acre among the eleven varieties tested over Ontario in 1893. This variety has also given the largest average yield per acre among 52 varieties that we have grown side by side for three years in succession at the

Agricultural College. It was started by Robt. Dawson, who lives near Paris, Ontario, who had a field of the White Clawson wheat in the year 1881 which was completely lodged. A single plant distinct from the rest of the crop was found in the field which stood up perfectly straight. Through continual cropping of the grain of this one plant, the Dawson's Golden Chaff has become established, and is now grown in the vicinity of Paris to the exclusion of nearly all other varieties. We know of no other variety which is stiffer in the straw than this kind. The crop is usually a handsome one, and is admired by the thousands of farmers who visit our trial grounds at the Agricultural College during the month of June each year.

Varieties of winter wheat.	Number of years tested at Agricultural College.	Average yield of grain. 81 co-operative experiments conducted in 1894.
		bush.
Dawson's Golden Chaff	3	35.7
Jones' Winter Fyfe	4	32.5
Early Genessee Giant	2	31.7
Early Red Clawson	5	31.5
Surprise	5	31.4
American Bronze	4	31.2
Golden Drop	5	31.1
Early White Leader	2	29.2
Bulgarian	4	28.8

DISCUSSION.

Q. Have you the Banner oats ?

A. Yes, we have had the American Banner oats for the past four years.

Q. How do they compare with those varieties on the charts ?

A. In the average of four years' experiments the American Banner has given an average of over one bushel per acre less than the White Schonen which stands last of the six varieties sent over Ontario in 1894.

Q. Which variety of oats would likely do the best on land containing a good deal of vegetable matter ?

A. I know of no variety better suited for such soil than the Joannette.

Q. How has the Egyptian yielded ?

A. The Egyptian has given about 1½ bushels per acre less than the Bavarian and about 14 bushels per acre less than the Siberian in the average results of six years' trials. In 100 pounds of the grain of the Egyptian oats there are about 40 lb. of hull, of the Siberian about 28 lb. of hull, and of the Joannette about 25 lb. of hull. The Egyptian is one of the thickest hulled varieties that we have, while the Siberian and the Joanette are among the thinnest hulled varieties.

Q. Have you tested the Golden Giant Side oats ?

A. Yes, we have had the Golden Giant Side oats for four years, and it has yielded about six bushels per acre less than the White Schonen variety. The straw is good, but the grain is usually very light per measured bushel.

Q. What about the Challenge ?

A. The Challenge we have had for the same length of time as the Lincoln, and during the two years that we have had these varieties the Lincoln has given an average of about 7 bushels per acre more than the Challenge variety.

Q. Have you tested the Bonanza?

A. Yes, we have tested the Bonanza and found it to be a failure with us, even in spite of all the praise it received in the United States. It is exceedingly weak in the straw

Q. Does the Joanette do better than the Black Tartar?

A. We have obtained the Black Tartarian from four different sources and have grown them since 1888. The Joanette has given an average of fully 20 bushels per acre more than the best yielding sample of the Black Tartarian variety in the average of six years' experiments with these varieties grown side by side. The Black Tartarian is more subject to rust than the Joanette.

Q. How have the New Wonderful oats done with you?

A. Among seven or eight new varieties which we obtained in the spring of 1892 and have now grown for three years, the New Wonderful has given the least yield per acre.

Q. Should that word be spelled "Joanette" or "Goanette"?

A. Some of the Ontario seedsmen spell it Goanette, but I cannot understand why. We imported this variety from France six years ago and got it by the name of Joanette, and I notice that that is the way it is spelled in all the French catalogues that we have at the College. To the best of my knowledge none of the Joanette oats have been imported from France into Canada but by the College six years ago and by a Toronto seedsman some three or four years ago.

Q. How is the Siberian in regard to rust?

A. According to the reports from experimenters over Ontario it has been one of the freest from rust. The Poland White, however, may have had a little less than the Siberian.

Q How does the Mandscheuri barley compare with the Common Ontario Six-Rowed variety?

A. They are both six-rowed barleys, but the Mandscheuri grows a little longer straw and has a longer head. In the experiments at the Agricultural College for six years in succession, the Mandscheuri gave an average of over nine bushels per acre more than the Common Six-Rowed. In 1892, the Common Ontario Six-Rowed was one of the varieties sent out over Ontario, and the Mandscheuri gave an average of over 10 bushels per acre more than the Common Six-Rowed in the average of the co-operative experiments. The Common Six-Rowed was only distributed the one year.

Q. Will these varieties all make good beer?

A. In regard to malting qualities I am not aware that the new varieties have been tested for that purpose.

Q. You say that the Kinna Kulla is a two-rowed variety?

A. Yes; the Kinna Kulla is a two-rowed barley.

Q. How does it compare with the Carter's Prize Prolific?

A. In five years' experiments with these two varieties grown side by side at Guelph, the Kinna Kulla has given 3½ bushels per acre more than the Carter's Prize Prolific. The Kinna Kulla is one of the stiffest strawed of the two-rowed varieties of 50 kinds tested, and the Carter's Prize Prolific, has a very weak straw.

Q. Which has given you the best results, six-rowed or two-rowed varieties?

A. On the whole the six-rowed varieties have done rather better than the two-rowed kinds, both in our own trial plots at Guelph and also in the co-operative experiments, although some of the two-rowed have done very well indeed.

Q. Are some of those varieties of peas more subject to mildew than others?

A. We have not been troubled with mildew on the peas, but from the knowledge of the straw of each of these varieties I should think the Egyptian Mummy would be the most likely to mildew of the varieties mentioned on the chart. I think there would not be much difference between the other three varieties in this respect.

Q. I notice that there is only a difference of 1·3 bushels of peas per acre between the best yielding variety and the poorest?

A. It must be remembered that none but leading varieties are sent out. Had we sent out some of the poorer varieties along with these kinds here mentioned, there would have been a big difference in the yield per acre.

Q. Even a bushel of increase per acre would amount to a great deal in the whole Province, would it not?

A. Indeed it would. By increasing the yield of peas one bushel per acre on every acre of peas grown in this Province in 1894, you would increase the amount of peas grown in Ontario last year by over 700,000 bushels; by increasing the barley crop one bushel per acre, the total amount of increase in Ontario would be about 500,000 bushels; by increasing the oat crop one bushel per acre, the amount of increase in Ontario would be 2,000,000 bushels, and by increasing the spring and winter wheat one bushel per acre, there would be an increase of about 1,000,000 bushels of wheat in this Province. You will observe that in the case of oats, the Siberian gave an average of about eight bushels per acre more than the best Ontario variety at the College in six years' trials, and that the Mandscheuri barley gave an average in the experiments over Ontario of about ten bushels per acre more than the common Ontario Six-Rowed variety.

Q Will you kindly name and give us some information regarding this variety of peas which a member of the Institute has brought here?

A. A few grains of this pea were brought from Egypt a few years ago and is now grown to a limited extent in Western Ontario. A very small quantity was sent to us in 1892, and in 1893 we had a sufficient quantity for a plot among nine varieties, which we grew in the Experimental Department for the first time in 1893. This variety has given the largest yield for two years in succession. It is called the Egyptian pea, but I secured a small quantity of the same peas at the World's Fair last year, and they were there called the Brazilian Coffee pea. They grow different from all other peas, the stems being upright and branching off somewhat in the form of a tree. The crop when growing is one of the most beautiful I ever saw and is greatly admired by visitors from all parts when going through the experimental grounds. I am suprised to find that this pea has been grown even to a limited extent by a person in this locality. I would advise him to take great care of it, as it may become a valuable addition to the crops grown in Ontario.

Q Have you tested the Colorado variety of spring wheat? If so, how has it done in your experiments?

A. We have grown the Colorado spring wheat in the Experimental Department for the past five years, but find that it does not equal the Red Fern in yield per acre. Although an early wheat it is a variety which is exceedingly easy to shell. In fact there is almost no other variety so bad to shell as the Colorado.

Q. Have you grown the Campbell's White Chaff spring wheat?

A. The Campbell's White Chaff has done very poorly with us in three years' tests at our experimental grounds, yielding on an average about ten bushels per acre less than the Hayne's Blue Stem.

Q. The Wild Goose has been grown in this locality to a limited extent. What do you think of it?

A. It is a very coarse wheat, but usually yields well. In the average results for five years it has yielded 1½ bushels per acre less than the Red Fern.

Q. How can these grains be obtained?

A. If large quantities are wanted, by writing at any time to Mr. Wm. Rennie, Farm Superintendent, Agricultural College, Guelph, or to myself, information will be given where they can be obtained. Some of them are grown extensively at the Experimental

Farm, and some of them are now sold by the leading seedsmen of Ontario. I think that all these varieties can now be obtained in fairly large quantities in Ontario. If small quantities of the leading varieties are desired for experimental purposes, you can write to me, and a circular describing our manner of distributing will be sent to you, from which you can choose whichever experiment you wish, and the seed will be forwarded to your address until our supply of some of the varieties becomes exhausted. Those who apply early, therefore, are almost sure to get the material for the experiment which they choose.

SUBSOILING.

By John Legge.

One of the most important means for maintaining and developing the fertility of the soil is deep cultivation. In connection with subsoiling the ordinary plowing of the country cannot be considered to average more than six inches in depth. The effect of continuous cultivation at a certain depth on clay soil is, by the pressure of the plow in turning the furrow, to form what is called the plow floor at the bottom of the furrow. The land being frequently plowed while it is wet the soil becomes compacted and pressed together to such a degree as to be completely impermeable to the ordinary influences of the season. The soluble parts of manure descend to this strata, and by the action of the plow become imbedded so as to be only partially available for the use of crops. This reserve of manurial substances may be completely utilized by increasing the depth and throwing a part of this hard bottom on the top. The next thing to consider is, are there any elements of fertility in the subsoil itself? In an experiment to determine this point conducted at Rothamsted in England, under the auspices of the Royal Agricultural Society, a piece of clay land was selected and the surface soil removed to a depth of three or four feet; it was then cultivated and sown with wheat without any manure. The wheat was sown year after year without rotation and without manure, the result being an average of 16 bushels per acre every year, thus showing that in ordinary clay soil there is an inexhaustible storehouse of fertility at the command of the intelligent farmer. As the desire of members of farmers' institutes is to profit by each other's experience, you may ask justly what is my experience in this matter. I have never seen any sub soiling done in this neighborhood but by myself, so the data is not large to draw conclusions from.

About twenty years ago we subsoiled a field. A wide gauge American plow was used going to a depth of ten inches; this was followed by a narrower plow going six inches deeper. The effect of this was to throw a good deal of the subsoil on the top. In fact it was said that we had ruined the field, and the crop sown the following spring did look backward for a short time, but it pulled up through the summer and was a heavier crop than the average, and that field ever since has maintained its superiority to a marked degree. The next experiment was on a piece of ground that had been carelessly farmed, plowing being annually done to the depth of two or three inches. It was considered to be a run-out piece of land. This was managed in a somewhat different manner; the wide gauge American plow was used as in the other case, but the plow for following was so made that the mouldboard could be taken off. The subsoil in this case was merely loosened. No manure was used. The very first crop after the subsoiling was above the average, being a marked contrast to the preceding crops, which were always below. The effect seemed to be that the water level was lowered, leaving a drier seedbed, and an increased depth of pulverized soil to store moisture for the heat of summer, and next the plow-floor being broken up and brought to the top, the elements of fertility contained therein were liberated by the air, frost and sunshine, and increased the power of the drains to draw off surplus water through the action of the subsoiling. Let me here say that on undrained level clay lands all efforts will be unavailing to improve the condition of the soil until provision is made to draw off the surplus water. Drain first, then follow with subsoiling, manuring and clovering, when every operation will be a complete success, and the records of crop failures will be a thing of the past.

UNDERDRAINING.

By Simpson Rennie, Milliken.

The most important of all sciences is that of farming—to know how to cultivate the soil so as to raise the largest crops with the least expense, and without permanent injury to the soil. The best authorities on agriculture say that thorough drainage will increase the product at least one-third. Drainage will often convert useless land into the most productive. Rain water should not be permitted to run off the surface of the soil, but should filter through it and then be removed, thus imparting to vegetation the valuable properties it contains, which are so necessary to the support of vegetable life. All soils of ordinary richness which contain a fair amount of clay will withstand a severe drouth without great injury to the crops, if thoroughly underdrained. Land which requires draining hangs out the sign of its condition to the practised eye. Sometimes it is in the broad banner of standing water, or dark wet streaks in plowed land, when all should be dry and of even color; sometimes only a fluttering rag of distress, such as the curling of the leaves of corn, or wide cracks in clay, or in feeble spindling grain. To recognize these indications is the first office of the drainer; the second is to remove the causes from which they arise. Land which requires draining is that which, at some time during the year, becomes filled with water that does not find a natural outlet, but remains until removed by evaporation. This is a very slow process, and becomes still more so as the level of the water recedes from the surface. Often in midsummer the top of the water of saturation is within a few inches of the surface, preventing the natural descent of roots, and by reason of the small space to receive fresh rains, causing an interruption of work for some days after each storm.

With regard to durability of underdrains, all I shall say is, if properly constructed, there is no fear of them wearing out in a man's life time. They seem to work better year after year, and the satisfaction obtained from walking on dry ground instead of wading through water and mud each spring and fall is certainly very great. I am sure that any person who is willing to risk a few dollars in underdraining some wet piece of ground will be well pleased with the result. The length of time it will take to repay the cost of draining depends on several conditions—the need of draining, the nature of the sub-soil, the depth of the drains and the distance they are apart. Generally it will repay the cost in from three to five years.

On commencing to drain, locate the main drains through the lowest ground, unless the grade is very steep and there is danger at the time of a freshet of the tiles being washed out and the drain destroyed. In such a case it would be well to keep a few feet to one side. To cheapen the cost of making the drains, first mark them out with an ordinary plow, and if a draining machine is not to be used, then go back and forth four times. The last twice is better to be done without the mould board, as the plowing should not be wider than nine inches at the top for an ordinary drain of from two and a half to three and a half feet deep. When the loose earth is shoveled out after the plow there will be a drain of nearly one foot, which can be finished in a very short time. After the plowing is done start and dig from the outlet or lowest point, and when a point is reached where a branch or lateral drain is required, start the lateral and run it out for a couple of yards, then proceed to dig in the main drain. By all means avoid sharp turns or square joints in joining one drain with another. The depth of the drains should vary according to the nature of the subsoil. In porous soils the drains should be put down three or more feet, but where there is a hardpan bottom there is no necessity in going so deep. The bottom of the drain should be very carefully graded, avoiding sudden changes in grade. That this may be well done, some system for levelling is necessary, but out of the many that I have ever seen used to my mind there is none equal to water. Usually when digging, especially in the fall or spring, there will be sufficient ooze from the sides of the drains which can be utilized for levelling purposes. But if the soil should be dry it is an easy matter to take out sufficient water to try the grade of a drain. As the freezing and thawing is liable to break and destroy the tile at the outlets, I recommend wooden outlets. Take a round cedar, split it through the centre; hollow out the heart, and then nail it together and put this in for the outlet. In laying tile always lay from the outlet up grade; place so that they will fit close together and lie solid. Stand on each tile and if any places in the drain are found to be soft, so that the tile will settle with one's weight, these soft places should be made solid by tramping in strong clay. This will also prevent quicksand from working up from the bottom and getting in at the joints, which would probably through time destroy the drain. In clay soil nothing more need be put on the tile than a portion of the moist clay taken from the sides of the drain and tramped solid before filling in the drain. In sandy soil a layer of dead grass or straw should be put over the tile to prevent the sand from getting into the joints, then tramp a few inches of earth solid on top of the straw, after which an ordinary plow may be used to fill up the drain.

Regarding the distance drains should be apart, no hard and fast rule can be laid down; but in any ordinary porous soil they need not be closer than thirty-five or forty feet, providing they are put down a good depth, for the deeper the drain the greater the pressure, and consequently the farther they will draw.

THE CULTIVATION OF THE SOIL FOR TURNIPS.

By G. B. Armstrong, Teeswater.

A large measure of success in farming depends on the fall and spring cultivation (more especially the former) of the soil intended for both grain and root crops. Hence, with this guiding principle before us, we should start immediately after harvest and plow the land with a twin or gang plow sufficiently deep to cut the thistles and yet shallow enough to allow all weeds to germinate. After it has been thus plowed it should be cross-harrowed at least twice, which will leave the soil fine. In the course of a few weeks, which will depend on the rapidity of the growth, it should be again treated in the same manner. This second plowing is almost as much needed as the first, because the most effective part of the weed destruction can be done in the fall, provided the weather is favorable.

Should it be the intention to spread the manure on the field in the winter time, it should be gone over with a single plow late in the autumn, leaving the furrows narrow and well set up. But should it be the intention to spread the manure during the following spring, then the land should be ribbed in preference to flat plowing, as the influence of frost, rain and snow during fall, winter and early spring, has a most beneficial effect on up-turned land, consequently the more soil that is exposed to the atmosphere the better. But in whichever way manure is put on, one thing is certain, that it should be applied in some manner at the rate of from fifteen to twenty loads to the acre. As early in the spring as possible, after it has been spread, the ground should be plowed shallow, as the nearer the manure is to the surface of the ground, after being covered, the more good will result. After having been well harrowed it should be allowed to remain untouched until about the first week in June, when it should be again plowed, this time deeply, also harrowed and rolled once.

The land is then in a fit state for drilling and sowing, which should be done at once with the drills about twenty-eight inches apart, and about two pounds of seed to the acre. The horse hoe or scuffler should be used at least three times during the season, and the plants thinned twice, always bearing in mind that the more cultivation any root crop receives during the summer, more especially if the season is dry, the more rapid will be the growth of the plant and destruction of the weed.

Opinions vary as to the proper time to commence harvesting this crop, but it is safer to be finishing on the first of November than commencing, for at this season of the year fine weather is uncertain and cold fingers may be the result of further delay, but in any case get them in in as clean and dry a condition as possible.

By way of conclusion I would emphasize the fact, that if you cultivate and feed the land it will feed you; therefore thoroughness of cultivation is the key note of this paper.

MANURES—CARE OF AND APPLYING TO THE SOIL.

By John McMillan, M.P., Seaforth.

Treating manures and applying them to the soil is a very important operation, and I am convinced that more than one-third of the benefit that we ought to derive from our manure is lost in the stables and in the barnyard before it goes to the field. In going along a highway one day after a heavy rain, I saw several farmers letting the water that had collected around the manure heaps in their barnyards away into ditches or streams running along the roadside. This water, no doubt, contained some of the most valuable constitutents of the manure. Few farmers put their manure up in nice tidy heaps in the barnyard. They, as a rule, spread it over a large surface which, I think, is a great mistake. As to the value of barnyard manure, it is estimated that a ton, where the manure from horses, cattle and swine are all mixed together, with the straw used as litter, contains :

Nitrogen, 9 lb., worth 15c. per lb	$1 35
Phosphoric acid, 4.2 lb., worth 8c. per lb	34
Potash, 10.4 lb., worth 5c. per lb	52
Total value of a ton of ordinary fresh barnyard manure	$2 21

The value also depends upon the food supplied to the animals. If fed upon poor food the manure will be poor. But if the food be rich the manure stands a better chance of being rich also. Then the condition of the animal must also be taken into consideration. When an animal is neither increasing in weight nor giving milk, the manure it produces will contain exactly the same amount of plant food that was contained in the food consumed. The fattening animal takes comparatively little valuable material from the food, as the greater part of the increase is fat which is said to contain no plant food. Of the phosphoric acid and potash contained in food of the fattening animal, from 95 to 100 per cent. will be found in the manure. When the animal is giving milk or growing rapidly, a part of the nitrogen and phosphoric acid will be removed in the milk, and in the growing animal is taken up in the production of bone and muscle, so it is estimated that the manure from milk cows and young growing animals will only contain from 50 to 75 per cent. of the fertility of the elements supplied in the food. The values of manure from different animals differ very much, and the fresh urine is much more valuable than the fresh solid excrement :

	Solid excrement.	Urine.
From horses	$1 36 per ton.	$8 62 per ton.
" cattle	86 "	3 14 "
" sheep	1 59 "	11 31 "
" swine	1 79 "	3 06 "

Those figures are taken from tables in a little work entitled " Science in Farming "

One of the first necessities is to have stable floors so that all the liquid manure will be taken up by bedding of some kind, and then have the manure put under cover if not taken directly to the field and put on the land.

When manure is taken out with a horse and put under cover, the horse going on the top of the manure and tramping it solid, it heats very little for a length of time. On a clay loam or clay soil the sooner the manure is put on the land the better, if the land is well drained, so that if it comes a heavy rain the water is all taken into the soil and escapes by the drains.

We put out our manure as much as possible in winter, spreading it as we put it out, preferring this to putting it in heaps in the field. Some are afraid of spreading manure on the surface for fear of the more fertile elements excaping into the atmosphere, but scientists tell us that before ammonia or nitrogen can escape, fermentation must take place. When manure is on the surface and well spread no fermentation that will injure takes place. Then after it is wrought into the soil fermentation sets in, which helps to pulverize heavy soils. Then if the land is a light sandy loam or sand, the manure should be well rotted and applied just before putting in the crop, whatever it may be. Give light coats only, and apply oftener than where the soil is heavy. Long or green manure put on heavy land helps to pulverize and keep the soil open, and allows the air to circulate to a certain depth. But well rotted manure has a different effect, and will help to consolidate a sandy loam or light sandy soil which is generally too loose and open.

In putting manure in a shed and letting it rot, care must be taken that it does not become too dry and mould on the top, and the ammonia and nitrogen escape in the shape of gas. If it is getting dry, put water on it and a little land plaster sprinkled over will prevent the loss of nitrogen and ammonia.

The sooner a farmer gets his manure on the land, the greater benefit he will derive from it, especially if the land is clay loam or clay and well drained. When manure is put in the barnyard, it ought to be put in in a tidy square heap and not spread all over a large surface. When scattered over a wide area and all the snow and rain that falls leaches through, it causes great loss, as the most valuable part is the liquid (or urine) which is easily carried away by leaching. Manure made in box stalls where a number of cattle are kept loose, and taken right out of the stables and put on the soil is considered about the best made on the farm.

Some farmers draw out the manure and put it in the field in large heaps, where it heats and rots. Unless great care be exercised much loss will be sustained by those practising this method.

There is no better way of increasing the manure heap, than by first feeding to animals all that is raised on the farm and purchasing oil cake or bran and mixing it with the meal fed to animals, as one ton of linseed cake is said to contain manurial constituents to the value of $18.10, and a ton of bran $13.25.

ROTATION OF CROPS

By Geo. Harcourt, B.S.A.

Many farmers have experienced the perplexities and annoyances of cropping that arise where no definite plan is followed Much of this unpleasantness, if not all, could be avoided by having a well defined plan of cropping the farm made out and followed from year to year. Such a plan is called a rotation.

To lay out such a rotation we need to know something about the peculiarities or characteristics of the ordinary farm crops, for they do not all obtain in the same way the materials they gather from the soil. An examination of our farm crops will lead us to the following points:

1. They differ in their composition, *i. e.*, in the amount of plant food they gather and store up in their tissue. All we have to do to see this is to look at the analysis of a lot of plants and we will see a marked difference.

2. They differ in their period of growth, *i. e.*, in the length of time they are growing upon the soil. Those that are in the soil a long time, such as fall wheat, have a better chance to gather some of their food, but they are at a disadvantage very often in obtaining their supply of nitrogen, as it is very apt to be washed out of the soil during the fall and spring rains, and the crop is ripe before any quantity gathers in the soil again. Those crops that are in the soil a very short time, such as barley, are at a great disadvantage and must have their supply of food ready at hand.

3. They differ in the range of their roots. Mangels, carrots, most of the clovers, and peas are the deepest rooted plants; turnips, wheat and rye come next, while the grasses, white clover, potatoes and barley are shallow rooted. The deep rooted ones have the advantage in having a larger extent of land from which to draw their supply of food.

4. They differ in the cultivation of the soil that is necessary for their growth.

5. They differ in their accompanying weeds and parasites. A change would tend to eradicate them.

6. They differ in their power of gathering plant food from the same place and from different places in the soil. This is one of the most important characteristics of the crops and will be taken up fully because it is upon this power the strongest reasons for adopting a rotation are based.

From the work of those who have made a study of the way the farm crops gather their food from the soil, we find that certain plant foods are necessary for the growth of successful crops; that without these practically no crop will be obtained; that certain of these foods the plants have no trouble in gathering; and that others they obtain only in certain forms and experience more or less difficulty in getting them.

The following shows in tabular form the name of those foods the plants experience the greatest difficulty in obtaining in one column and those they can obtain more or less readily in another.

—	Plant foods obtained more or less readily.	Plant food obtained with more or less difficulty.	Nature of special manure.
Cereals	Potash and phosphoric acid	Nitrogen	Nitrogenous and phosphates.
Legumes	Nitrogen and phosphoric acid.	Potash and lime.	Potash and lime.
Meadow hay	Nitrogen	....	Potash, lime and phosphoric acid.
Turnips	Potash and nitrogen	Phosphoric acid.	Phosphates.
Mangels	Potash and phosphoric acid	Nitrogen	Nitrogenous.

The cereal crops, as wheat, rye, barley and oats, seem to have a special power of attacking the insoluble silicates in the soil and abstracting from them the potash and to a more limited extent the phosphoric acid necessary for their growth. Experimenters have shown that the silica is not necessary for the successful growth of a cereal crop; they can take it up but they can do without it. The plant makes use of the potash, lime and phosphoric acid in the silicate and excretes the silica on the surface of the leaves and stem

The cereal crops obtain almost all their nitrogen from the soil in the form of nitrates. As these nitrates are liberated gradually in the soil and are very soluble in water, thus easily washed out, they become of great importance to the plant. The great bulk of the combined nitrogen present in the soil is not in a form that can be taken up by cereal crops, but has first to be converted into nitrates; as this proceeds somewhat slowly there is only a small supply at a time. They are thus greatly helped by supplying them with a manure containing the nitrogen that they experience difficulty in obtaining. The spring grown cereals are usually greatly helped by a supply of phosphates.

The legumes, as the clovers, peas, beans, lupines, and vetches possess feeding powers quite different from the cereals. A most striking characteristic of these crops is the large amount of nitrogen which they contain, yet they are perhaps the least benefited by an application of manure containing large quantities of nitrogen. The surface soil is always richer in nitrogen after the crop has been removed than it was before, on account of the roots and stubble left in the soil. Many theories have been advanced to account for the peculiar feeding powers of the leguminous plants It has been the cause of much controversy, but until within the last few years no really satisfactory explanation was forthcoming. A few years ago the theory was advanced that it was caused by a micro-organism in the soil, that they were the cause of the formation of the knots, tubercles or swellings found on the roots of leguminous crops, and that living in these swellings they had the power of gathering nitrogen from the atmosphere and of working it into the tissues of the plant. As four-fifths of the atmosphere is nitrogen gas, and as the leaves of our crops are constantly bathed in it, yet unable to appropriate it, it is an important advance in scientific agriculture and has an equally important bearing upon practical agriculture as well. If this organism can gather for the farmer the nitrogen from the atmosphere and enable him to store it up in the soil, it certainly is a step in advance, for the nitrogen is by all odds the most expensive plant food the farmer is called upon to furnish. Experiments in England, on the continent and in America have confirmed the theory and it may now be accepted as a fact. These small organisms are present in most fertile soils, but experiments go to show that they may be destroyed, and that when that is the case a poor sickly growth of a crop is the result. Upon watering such a soil with water that had been washed through a portion of soil known to contain these organisms, the knots or tubercles soon formed on the roots and a good growth took place. Who knows but in the near future inoculating the soil with certain organisms may be a common operation on the farm?

While the legumes can thus obtain their supply of nitrogen somewhat independently, they find great difficulty in gathering potash and lime. They do not seem to have the same power of attacking the silicates that the cereals enjoy, hence they are greatly benefited by applications of manures containing these elements Lack of readily soluble potash in the soil may be the true reason clover does not do well in some sections.

We find the feeding powers of these two classes of crops are almost the opposite of each other, hence it is of importance in a rotation to alternate these crops where possible, because the legumes will store in the surface soil the nitrogen so much needed by a cereal crop. In meadow hay, which is really a cereal crop cut before it is ripe, the roots are shallow feeders and are not as able to gather their potash, lime and phosphoric acid as well. They obtain their nitrogen fairly readily, because of the conservation of the nitrates in the soil by the growing crop and from the decay of leaves and stubble. To obtain their fullest growth they require manures supplying the ash constituents. The turnip has a distinctly greater power of gathering nitrogen than have the cereal crops, they have also little trouble in obtaining their supply of potash, but they have singularly little power of gathering the combined phosphoric acid of the soil and are thus greatly benefited by an application of manure containing phosphates. Thus we find superphosphate always recommended for turnips.

Mangels have deeper roots than turnips, and are able to draw a large amount of plant food from the soil. The amount of nitrogen, potash and phosphoric acid that they are capable of taking up is very large, and when removed from the farm they make one of the most exhaustive crops the farmer can grow. Both mangels and turnips require large dressings of a general manure, such as farmyard, for production of full crops, but the manure for turnips should be distinctly phosphatic while that for mangels should be nitrogenous. Potatoes are largely surface feeders and require a liberal dressing of a general manure to obtain best results.

Having thus looked at the distinctive characteristics or peculiarities of the different crops, we have some knowledge of these crops upon which to work to form a rotation so that it will be least exhaustive upon the soil. A rotation of crops is simply a judicious arrangement of them, taking advantage of their feeding powers so as to obtain a full yield with the least expenditure for manure.

No rotation can be given that will suit all farmers, for what will suit in one section of country will not suit another; the crops needed for a particular line of farming may not meet the requirements of another. Having decided on a certain line of farming, and the crops necessary to grow for successful work, it is necessary to arrange these crops in rotation to best advantage. This each farmer can best do for himself according to his local conditions In laying out a rotation it is usual to begin with the crop with which the manure is applied; in root growing districts this will be roots, with others it will be fall wheat, and others again will begin with corn. The old English Norfolk rotation may serve as an example, though it does not fulfill all the requirements of a rotation needed in Canada. It was: roots; barley; clover; wheat; a four course rotation. In this we have a legume between the two cereals and it furnished nitrogen for the wheat that follows it. This rotation may be easily made into a five or even six course one by continuing the hay for one or two years, but in that case the supply of nitrogen would not be so great for the wheat. There are no oats and peas in this. To give these I would suggest oats after hay (one or two years), then peas followed with wheat in preference to the wheat on the sod followed by peas, then oats, as the peas gather nitrogen which the wheat can make good use of in the fall, *i. e.*, of course, where fall wheat is grown. Many prefer to put the peas on the sod, but that would throw two cereals to follow one another, which is a bad plan. This of course can be done by rearranging the whole rotation. The introduction of a legume to gather nitrogen is necessary where the rotation is long, as the fertility will be greatly diminished before the time for general application of manure comes round. Where corn is grown it can take the place of roots. Another good plan is to arrange the rotation so that corn follows the clover. Spring wheat and even oats may take the place of barley, and so on the different crops can be shifted about to suit each individual case. There is no need in a rotation for a bare or summer fallow, for if the hoe crop is properly attended to the weeds can be held in check, and if the practice of shallow plowing immediately after harvest is followed, no trouble from weeds need arise.

A rotation carefully made out to suit the individual wants of a farmer will give good satisfaction in its working, be easier on the land, and more use can be made of the manure in aiding the land to sustain good crops.

DAIRY DEPARTMENT.

SELECTING COWS FOR THE DAIRY.

By Prof. H. H. Dean, O. A. C., Guelph.

The importance of having good cows for successful dairy work is becoming more apparent to farmers each year. As men become more conversant with the cost of keeping cows, and the relative profit made from first-class and poor animals, the question of how to select the best for our dairies is one which we all should strive to answer well. When we consider that somewhere about $24 yearly is needed to pay for a cow's keep and interest on the money invested, it is plain that 300 pounds of cheese at 8 cents per pound and 150 pounds of butter at 16 cents per pound, just squares the cow's account, assuming that the by-products (skim-milk, buttermilk, whey and manure) pay for the labor of attendance. The minimum standard of production required in the dairy herd of the College is 6,000 pounds of milk, or 600 pounds of cheese or 250 pounds of butter. All cows which do not reach this standard are sold for beef, without regard to breed, beauty, color or character. By the way, we find it better to fatten cows while they are milking, and to have them ready for the butcher by the time the milk yield falls below say 10 or 12 pounds per day. It has been found that cow beef is very expensive to produce, costing, according to some of the experiment stations from 10 to 15 cents for each pound of gain, with old cows.

One point more by way of introduction. The relative profit is increased very much as the yield of butter or cheese gets above the profit and loss line, which, as I have said, is somewhere about $24 in Ontario. Up to this line there is no profit whatever, and unless a cow goes over this point she is either kept at a loss or else she plays "teeter" with her owner. While 300 pounds of cheese give no profit, 400 pounds give a profit of $8, 500 pounds a profit of $16, and 600 pounds of cheese a profit of $24; on the basis of $24 for yearly cost, and the cheese netting 8c. a pound, the 500 pound cow makes twice as much profit as the 400 pound cow, and the 600 pound cow three times as much as her 400 pound sister, assuming that the cost of feed is the same in all cases. It will probably cost more for feed in the case of the greater production, but not in proportion to the increased amount of cheese or butter produced. A clear profit of $8 per year is 20 per cent. on the money invested in a cow at a cost of $40. Where can we invest money to better advantage when the banks pay but three and a half to four per cent?

How to Know Her?

The profitable or unprofitable dairy cow is known for *certainty* in but one way—weigh and test the milk and keep an account of her feed. A pair of scales should be a part of the furniture in every well appointed dairy stable. Weigh the milk from each cow daily, weekly, or monthly, and test at regular intervals during the year. Add 10 per cent. to the butter fat for the butter produced and 25 per cent. to the butter fat for the cheese produced, and in this way we know the capacity of each cow But in buying cows we seldom have an opportunity to test them with scales and Babcock tester, and it is necessary to have some other test. The test most commonly used is that of the eye and hand in judging the conformation. A good judge may easily be deceived by this test. As an example, a prominent dairy authority came into our dairy stable during January of 1895, and pointing to a cow, I said, "Mr. ——— what do you think of that for a dairy cow?" He said, "I don't know what you would do, but I would not buy her for the dairy." This cow's record from March 25th, 1894, to December 2nd, 1894, is 8,147 pounds of milk and 287½ pounds of butter-fat (about 316 pounds of butter). This we consider a good record. This same cow has been giving 40 pounds a day and over for two or three months this year, and her weekly test for fat has frequently gone over four per cent. After four years' experience, not long, certainly, I expect to learn a great deal yet about choosing cows. I have come to the conclusion that the following is a safe rule in selecting cows:

No Udder, No Milk—Small Udder, Small Quantity of Milk.

The foregoing may be called the "udder theory." I have bought cows with small udders and with poorly shaped udders, and have never seen one of these that was a good cow. As we weigh each cow's milk night and morning, and take samples every night and morning (testing weekly), we have had an excellent opportunity to test the matter. While it is true that no udder no milk, it is not always true that a cow having a large udder gives a large quantity of milk. I have seen exceptions to the rule, but still I consider the udder, milk veins and milk wells and the teats the most important points in selecting a good cow for dairy purposes.

In addition, the following is given by authorities as a standard description of a dairy cow, and is the one used at the College with our students:

Form, wedge-shaped as viewed from front, top and back. Weight from 800 to 1,000 pounds. The quality of the hair fine and soft; skin of medium thickness, mellow and elastic; secretion, yellow; bone, fine and clean; temperament, sanguine (lively); muzzle, clean cut; mouth and nostrils large; eyes, full, mild and bright; face, lean, long; expression, quiet; forehead, broad, high and full; ears, of fine texture and medium size; neck, fine; length of neck medium; throat, clean; dewlap, light; withers, lean and thin; shoulders, light and slanting; forelegs straight and short; shank, fine; chest, deep and low; girth, large; ribs, broad, long and wide apart: stomach, large; back, lean, straight and open-jointed; loin, broad; flank, low; navel, large; hips, far apart; space between hooks, level; rump, long and wide; pin bones, high and wide apart; thigh, long and thin; escutcheon, spreading over thighs and extending far upwards; udder, long and capacious, but not pendulous, extending well up behind and far forward; quarters, even and free from fleshiness; teats, large and evenly placed; milk veins, large, long and tortuous; milk wells, large; legs, straight and set well apart; shank fine.

BUTTER-MAKING ON THE FARM.

By W. S. Fraser, Bradford.

It is not my purpose to advocate butter-making on the farm in preference to making it at creameries, but as many have not the latter privilege, what I write is addressed to them.

First, we want cows that give a large quantity of milk of a good quality—that is, containing a high percentage of butter-fat; also that they be kindly treated, not merely that they be not beaten or abused by boys or dogs, but that their wants be anticipated and supplied. In summer they should have abundance of good food, of a kind that will not give the milk an objectionable flavor. Cows must have access also at all times to pure water and clean salt. During the hot, scorching weather they should be provided with ample shade, or taken into the stables during the day, where they may have some respite from the flies. A provision for the time when pasture is short may be made by planting corn where it can be easily cut and fed. When the nights are cold and wet in the fall they should not be left out, but housed in comfortable quarters. The winter quarters should be warm and well ventilated, so that the milk may receive no taint from the surroundings. If given a daily ration of corn silage, say 40 lb. or roots 50 lb., chaff well moistened with water, about 4 lb. ground grain twice a day, with a feed of clover hay at night, and all the good water they care to drink, with salt at will, they will do their very best. Milking should be done at regular times, the udder being wiped thoroughly with a coarse cloth before the operation is begun.

The milk should be strained immediately, and, if no separator is used, it should be set at once at a temperature of not less than 90° in deep cans, which should be placed in a tank containing ice water at a temperature of about 40°. Under those conditions an almost perfect separation of cream will be effected in twelve hours. The cream should be kept in a closed can at an even temperature of say 48°, and each time fresh cream is added the whole should be thoroughly stirred. About twenty-four hours before churning the cream should be raised to a temperature of about 65° (using a dairy thermometer), This is best done by setting the cream can in a larger vessel containing hot water and constantly stirring until the desired temperature is reached. This cream should be kept at a temperature of 65° until thoroughly ripened for churning. A tablespoonful of sour milk or cream to each gallon of cream should be added before setting it away to ripen, and while the ripening process is going on it should not be stirred. This cream, which should be ready to churn in about eighteen or twenty-four hours, should be strained into the churn through a cheese cloth. A temperature of about 65° in winter and 58° in summer will be found to produce generally the best results. The barrel churn is perhaps the best, and it should be large enough to contain the cream and be little more than half full. With all the conditions right the butter should come in about half an hour. The glass in the lid of the churn should be closely watched, and when the grains of butter are about the size of clover seed some of the milk should be drawn off and a little water at about 50° added, and the churning resumed. When the grains of butter are as large as wheat grains it is done. Draw off all the buttermilk, letting it run through a dipper having a perforated bottom, so as to allow none of the butter to escape. Then pour into the churn about as much water at about 54° as the churn contained milk, turn rapidly a few times, draw off the water, and repeat until the water is quite clear, when the butter should be thoroughly free from milk. Then take the butter from the churn and weigh so as to ascertain the quantity of salt required. This amount of salt should accord with the taste of the customer, and usually varies from $\frac{3}{4}$ oz. to 1 oz. per pound. When working the butter a butter-worker should be used. This is a triangular board about three feet long and two and a half feet broad at the wide end, supported by three legs, the narrow end being about two inches lower than the other so as to cause any water that may be in the butter to run off while working. A wooden lever is attached, with which to press and work the salt through the butter. The best kind of salt should be used. Print in one of the many oblong prints in use, fold neatly in parchment paper and get it to the customers as soon as possible. Do not sell butter to the store keepers, as they will not, as a rule, pay any more for a good article than for an inferior one. Never use cloth on your butter rolls, as it is offensive to many, and suggestive of having previously had other uses. Be scrupulously clean throughout the whole process. Make a good article, secure good customers, and do not be afraid to ask a good price.

DAIRYING AND CORN GROWING IN MUSKOKA.

By Thos. H. Mason.

The importance of the dairy industry of Canada is now generally recognized, although even now in many parts of the country there is a very general tendency to underestimate the value of this industry, and to cling firmly to old established lines that, unfortunately, under modern conditions are far from profitable.

Those districts which in the past have paid the greatest attention to dairying are the ones that are now in the best financial condition, and are standing the stress of hard times best, while the reverse is true of the districts that have mainly placed their dependence on grain growing. The value of the wheat crop of Canada is estimated by competent judges to have been, in 1894, about twenty-one million dollars, while the value to the country of the different products of the dairy could not have been less than double that amount, the cheese exports alone amounting to nearly fourteen millions of dollars in 1894. It has been urged by some that if we increase the productions of the dairy in this country we will overdo the business and ruin the market; but a slight examination of the facts will convince us that such a view is erroneous. It is not so many years ago that we in Canada were actually not producing enough cheese to satisfy home consumption, a small quantity being annually imported from the United States. Then the factory system was introduced, a small export trade was started, and the trade has grown until it has become one of the most important exports of the country. Now the price has not fallen, but, on the contrary, with improved quality—with a developed export trade—there has been a steady increase in the price, so that now we are receiving in this country much better prices for cheese than we did twenty-five years ago. The same holds good in a large degree in the butter trade, although we have not improved our butter-making to the same extent that we have our cheese. Still it is a remarkable fact that prices of dairy produce are fairly satisfactory, while in nearly every other branch of farming there has been a very great falling off in prices received.

The Muskoka district, from all that we can learn, possesses some especial advantages for dairying, and, while owing to the broken character of the country, state of roads, etc., the factory system will not be generally introduced, yet there are some sections where cheese factories or creameries can be profitably operated. On almost every farm in these districts there is an abundant supply of pure water, which is one of the essential requisites in dairying. There is also an abundant supply of good natural grasses during the whole season. Owing to freedom from drouth, it is not necessary to furnish other fodder during the pasturing season, and finer flavored cheese and butter is obtained from grass than from any other food. The coolness of the nights is also an advantage in dairying. The dairy products of northern Ontario are becoming annually more popular as their fine quality becomes known. The local markets in these districts are very good; as residents are not shipping anything out of the country, and in many parts are importing, it is reasonable that they should have good markets. We have found different gentlemen in various parts of the district who are continually receiving from twenty to twenty-five cents per pound for butter. I need hardly point out how much easier it is to market the value in butter or cheese of a ton of hay than it is to market the hay itself. We find in many parts of the district farmers drawing hay over bad roads ten or fifteen miles and selling it at from six to eight dollars a ton, which, if properly handled, would have given them more than that value fed at home, and also help to retain the fertility of the farm.

Dairying, perhaps more than any other branch of farming, maintains and increases the fertility of the soil, and while many in this new country may think this of small importance, yet if we look at the older districts we find it one of the essentials to profitable farming, and that soils, especially those of a light character, soon become impoverished by the sale of hay and grain crops. In order to succeed in the business we find it necessary to surround our cows with the best conditions Now, some may say "Its all very well to talk, but I cannot afford expensive buildings." Well, is it necessary to have costly buildings? It is possible to render even log buildings fairly comfortable if we try; frame buildings by the use of felt or tar paper and plenty of cheap lumber may easily be made comfortable and almost frost proof. Certainly, nothing can ever be made out of cows if kept in a half frozen condition. It will take half the summer for them to recover from the effects of the wintering. Winter dairying under such conditions would be folly indeed. Cows in winter must have plenty of good succulent food—food that will keep the digestive organs in a healthy condition, in fact, as nearly like summer conditions as possible. I understand that in every portion of this district roots of all kinds succeed admirably, large yields being often obtained as the first crop on new fallows. Now a liberal supply of roots is an immense help in keeping cows in strong, healthy condition, and when spring comes they will give the best results at once as soon as they go to pasture. In some parts of this district we find corn grown successfully, and a great deal of interest is manifested in the silo and in corn growing. Many have tried corn growing and have failed—principally owing to unfavorable location or planting unsuitable seed.

The large, late growing southern varieties, such as Mammoth Sweet, Red Cob Ensilage, Mammoth Cuban, etc., do not succeed in this northern country. They do not mature one year in ten, and nothing is more disappointing as cattle food than green immature corn; there is practically little food value in such. Corn reaches its greatest food value at the glazing stage. Again, those large southern varieties have weak germinating power. The varieties suited to this district are the very early ones, such as Compton's Early, Longfellow, Blue Blade or White Flint. At Parry Sound we found a variety of corn grown very successfully there—a white flint that has been long grown by the Indians on an island in Georgian Bay. I believe it will prove very suitable to this district, and that by taking an early variety and selecting the earliest ripening ears, braiding and drying out before freezing weather comes, that in a few years by selection and development a much earlier and more productive sort could be obtained than any variety that they now have; also home grown seed, saved in this way, has a greater germinating power. It grows at once very strong, seems hardier and resists cold better than that grown in a southern latitude. Several days would be gained by planting this seed, which is an important matter in a short season. A warm, dry soil should be selected, and if well manured all the better, as it is will hasten the ripening. A good strong sod gives the same results. Do not sow broadcast, plant (for seed) in hills three and one-half feet to three and one-eighth apart, thin to three plants in a hill. For fodder, plant in hills three and one-half feet one way by twenty inches the other, four to seven grains in hill; some plant three feet apart each way—either plan gives good results. Cultivate as often as possible. Use the harrow at first every two or three days until the corn gets four or five inches high; then cultivate, and cut when glazing. If the grower has no silo, put up in large shocks (the larger the better) convenient to the barn. Do not draw into the barn and lay it down, as it will spoil This fodder makes an excellent winter food for cows, fed in connection with other foods. It is not a perfect food alone, being deficient in albuminoids. It needs clover hay, pea meal and bran fed with it to get best results.

In conclusion be exact and regular in work. Feed, milk, water and salt regularly. Pay attention to cleanliness. Put goods on the market in an attractive form, and you will find dairying a pleasant and profitable occupation.

BUTTER-MAKING ON THE FARM AND IN THE FACTORY.

By J. W. Steinhoff.

How often do we hear people say "I can't bear bad butter," or again, "If I have good bread and butter I can always make out a good meal," showing how large and important a portion of the daily food supply this one article of butter forms. In this particular I think butter differs from almost every other class of goods, as only a first-class article is wanted. I never yet heard a person enter a store and ask for a second or third rate article of butter because it was cheap. And yet if we take the testimony of shop keepers and experts for anything, it is a fact that a large number of Canadian homes must be supplied with butter that is not first-class.

I have been told by several country merchants handling a large amount of butter that not more than twenty to thirty per cent. of the butter they get can be recommended as first-class. This of course is butter made on the farm. But in saying this it must also be remembered that a large amount of the finest butter made on the farm is not sold in this way or through the open market at all, but is placed directly in the consumer's hands; and further, it is plain to any close observer that a great improvement in the quality of butter has taken place since the travelling dairies started out in their excellent work; but in looking over the reports of the markets from day to day we notice a great variety of prices for butter. Hence we may enquire why this variety of prices and where does the high-priced butter come from? This week choice rolls are quoted in Toronto at from 14 to 15 cents, common, 12 to 14 cents, and tubs as low as 8 to 10 cents, while just below we notice creamery quoted at 21 to 22 cents. Wherein, then, is the difference in value, as the creamery butter is made from the same milk that would otherwise be made up on the farm? It must be in the method of manufacture.

I think there is only one advantage which factory butter should have over that made on the farm, and that is the uniformity of quality that is to be accomplished by so large an amount being made by one skilled person. Let us, then, consider as briefly as possible wherein the method in creameries may differ from that practised on the farm. I think the first essential difference is in the treatment of the cream. In creameries the cooling of the cream commences as soon as it is separated, and is continued as speedily as possible until it is below 60°. The quicker it can be accomplished the better. On the farm, however, in too many instances during the summer months when it is the most essential, there is no means provided for cooling the cream, and as a consequence it is often practically spoiled before the churning begins. It is a nice point, and a very important one, to have the cream the proper temperature, consistency and degree of acidity, when churning is started.

A second point of difference is that at creameries the churning is always stopped while the butter is in the granular form about the size of small wheat grains or No. 14 shot. The buttermilk is then drawn off and about the same quantity of water added at a temperature varying somewhat with conditions, but about six degrees below that of the buttermilk. A few turns of the churn follows and this water is then drawn off and a second water added, which washes the buttermilk completely out of the butter instead of working it out.

Coloring should be followed judiciously on the farm, the same as in the factory, varying with changes of food and seasons. Another point is the weighing of the salt very carefully. and using only dairy salt. How it grates on one's nerves and palate to have the knife grind on salt undissolved when cutting butter.

The manner in which butter is put up often detracts from or adds to its price. Who wants to buy butter that has no attractiveness about it? It is made just as well as possible at the creameries either in prints put up in parchment paper bearing a neat brand, or in tubs well finished in every particular. It is often the case that butter rolled in cotton with torn edges will retain the threads from the edges of the cotton, and this, of course, is very objectionable and uninviting. The last point of difference I will mention is that factories which have made the greatest success have universally marketed their butter fresh, in most cases a day or two after it is made. This should also be done on the farm. I believe there are few exceptions to the rule that butter declines in value after a week old unless placed in a refrigerator at freezing point.

In conclusion I may say that I believe if all butter was made first-class it would double the consumption in Canada. The market has never yet been seriously glutted with fancy butter. If one has a quality of butter that smells a little cheesy then he is not apt to put it on the bread very thickly. I give a parting hint to the housewives who perhaps make most of the butter on the farm: Do not be over sensitive about your customers criticising your butter. It is only in this way that you can find out when you are suiting their taste. Both cheese and butter made in the factories get severe criticism. The weak point in trading butter for goods is that everything goes as good. It is the customer's taste we must abide by, not our idea of what we consider fine butter.

LIVE STOCK DEPARTMENT.

FEEDING STANDARDS AND RATIONS FOR DAIRY COWS.

By G. E. Day, B.S.A., Guelph, Ont.

A great deal of attention is at present being devoted to the economical use of our stock foods ; and, since a knowledge of the composition of food stuffs and an intelligent conception of the use of their different constituents cannot fail to be of value to the thoughtful feeder, this paper has been prepared in the hope of simplifying the subject, and of attracting more attention to this very important question.

In the first place, we must understand that plants contain substances almost identical in composition to the substances which comprise the animal body. Animals eat plants, digest a portion of them, and use the digested portion in building up the different parts of their bodies, in producing milk, or in producing heat and energy. Thus, some of the substances form bone, some form flesh, muscle, blood, or milk ; some form fat ; while others are consumed in the production of heat, which is necessary to sustain animal life and energy.

The substances of which plants are composed may be grouped under five heads, as follows :

1. Water.
2. Ash, or mineral matter.
3. Protein (sometimes spoken of as "proteids," or "albuminoids.")
4. Carbhydrates, (also called "nitrogen free extract.")
5. Fat, (sometimes called "ether extract.")

It is impossible to accurately estimate the value of the water which foods contain. In many cases the water seems to very materially increase the feeding value of the fodder, which fact is strikingly illustrated in the case of pasture grass and roots ; and, apart from this feeding value, such succulent fodders have a beneficial effect in keeping the animal system in good working order.

Ash, or *mineral matter*, is used in the formation of bone, and is therefore of importance in feeding young growing stock. The high value of oats in feeding young animals is due to the fact that oats are especially rich in mineral matter, and are therefore good bone formers, while it is well known that an exclusive grain ration of corn is injurious to young stock, simply because corn is deficient in ash.

Protein contains nitrogen, and is concerned in the formation of flesh, muscle, blood, milk, hair, wool, horn, etc., and, probably, to some extent fat. It may also supply heat and mechanical force, enabling the animal to do work. By work is meant any kind of muscular exertion.

Fat undergoes combustion in the body, producing heat which is necessary to create mechanical force. It is also stored up in the body as fat, to be used when required. Thus fat animals can live a long time without food, the fat that has been stored up supplying heat.

Carbhydrates are concerned chiefly in the production of heat and fat. They form the largest part of vegetable foods.

If an animal is fed upon protein alone, it cannot live long, but becomes sickly and dies in a comparatively short time. Protein is also more expensive than carbhydrates, and therefore it is a wasteful practice to feed more protein than is necessary. At the same time, in order to obtain the best results, a certain amount of protein is necessary, as is also a certain amount of fat ; and the object of the feeder is to compound a ration which contains these three substances (protein, carbhydrates and fat) in the most suitable proportions. Such a ration is called a "balanced ration."

The relation which the digestible protein bears to the digestible carbhydrates and fat is called the "nutritive ratio" of a fodder. Thus if we say that the nutritive ratio of a fodder is 1:7, we mean that there is one part of digestible protein to seven parts of digestible fat and carbhydrates.

The value of a fodder depends upon its composition and its digestibility. No fodders are entirely digestible, though roots and milk are very nearly so. We cannot therefore determine the nutritive ratio of a fodder from its composition only, but we must know what portion of the different constituents are digestible.

Digestion experiments are very difficult to conduct, but the following table shows the latest conclusions of experts as to the amount of digestible nutrients in the several food stuffs named, and may be regarded as approximately correct.

The column under "Total Organic Matter," contains the total amount of digestible and indigestible protein, carbhydrates and fat, in the different fodders.

POUNDS OF NUTRIENTS IN 100 POUNDS OF FODDER.

Fodder.	Digestible protein.	Digestible carbhydrates.	Digestible fat.	Total organic matter.
Pasture grass	2.6	10.6	.5	18.0
Green fodder corn	1.3	11.8	.7	19.5
Green clover	2.9	14.1	.4	27.1
Green rye	2.1	14.1	.4	21.6
Green oats	2.7	22.7	1.0	35.3
Corn silage	1.3	14.0	.7	24.2
Fodder corn, dry	3.7	40.4	1.2	66.8
Red clover hay	6.5	34.9	1.6	78.5
Alfalfa hay	7.6	37.8	1.3	84.2
Timothy hay	3.0	43.9	1.2	82.4
Oat straw	1.6	41.4	.7	85.7
Pea straw	4.3	32.3	.8	79.8
Potatoes	1.4	16.1	.1	20.1
Sugar beets	1.1	9.3	.1	12.6
Mangels	1.1	4.8	.2	8.0
Turnips	.6	5.5	.2	8.7
Carrots	1.0	7.1	.3	10.4
Corn	7.1	62.7	4.2	87.6
Corn and cob meal	6.5	56.3	2.9	83.4
Oats	9.1	44.7	4.1	86.0
Barley	9.5	66.1	1.2	86.7
Wheat	9.2	64.9	1.4	87.7
Wheat bran (roller)	12.6	44.1	2.9	82.4
Wheat bran (stone)	10.1	47.5	2.6	83.1
Wheat shorts	11.6	45.4	3.2	83.6
Wheat middlings	12.2	47.2	2.9	84.5
Rye	8.3	65.5	1.2	86.5
Buckwheat	7.7	49.2	1.8	85.4
Pea meal	18.0	56.0	.9	86.9
Malt sprouts	19.8	36.2	1.7	84.5
Brewers' grains	3.9	9.5	1.3	23.3
Brewers' grains, dried	16.2	35.5	5.3	88.7
Gluten meal	25.0	49.4	5.6	89.7
Starch feed, wet	5.5	21.7	2.3	34.3
Cotton seed meal	36.9	18.1	12.3	84.6
Linseed meal, old process	28.3	32.8	7.1	85.1
Linseed meal, new process	27.2	32.9	2.7	84.1
Skimmed milk	3.1	4.7	.8	8.9
Buttermilk	3.9	4.0	1.1	9.2
Whey	.8	4.7	.3	5.9
Whole milk	3.5	4.8	3.7	12.0

N.B.—Linseed meal is the American name for oil cake.

In the production of heat, fat has about 2.2 times the value of carbhydrates, and as the production of heat is closely associated with nutritive value, it is customary to count fat as 2.2 times as valuable a carbhydrates for fodder. Therefore if we multiply any given amount of fat by 2.2 the product will represent the amount of carbhydrates that the given amount of fat is equal to.

If we wish to find the nutritive ratio of a fodder we must first find the digestible nutritients which it contains. Then the amount of fat is multiplied by 2.2 to express the amount of carbhydrates that it is equal to. The product thus obtained is then added to the amount of carbhydrates, which gives the total amount of carbhydrates which the fat and carbhydrates are together equal to. Then this number is divided by the amount of protein. For example, we will determine the nutritive ratio of barley. According to the table, it contains digestible nutritients in 100 pounds as follows: Protein, 9.5; carbhydrates, 66.1; fat, 1.2. Then multiplying the fat by 2.2 we get $1.2 \times 2.2 = 2.64$. Adding this product to the carbhydrates we get $66.1 + 2.64 = 68.74$; therefore nutritive ratio = 9.5:68.74. But it is customary to express the digestible protein as 1, therefore we must divide by the amount of protein, which gives nutritive ratio, 1:7.23.

By means of many experiments, feeding standards have been compiled for different classes of stock. To German experimenters belongs the credit of first investigating the matter, and Dr. Emil Wolff, a noted German scientist, proposed the following feeding standard for dairy cows.

A dairy cow in full milk should receive per day and per 1,000 pounds live weight:

Total organic matter	24 lb.
Digestible protein	2.5 "
" carbhydrates	12.5 "
" fat	.4 "
Total digestible nutrients	15.4 lb.
Nutritive ratio	1:5.4

The German standard given above does not correspond with the practice of American dairymen, and after obtaining information regarding the rations fed by a great many leading dairymen in the United States and Canada, the Wisconsin Experiment Station recommends the following standard, which is known as the American standard ration for dairy cows:

Total organic matter	24 5 lb.
Digestible protein	2.2 "
" carbhydrates	13.3 "
" fat	.7 "
Total digestible nutrients	16.2 lb.
Nutritive ratio	1:6.9

It is highly probable that the American standard will prove more satisfactory than the German.

If we wish to formulate a ration we must first make a trial ration of the foods we wish to use, find out how much of the different nutrients it contains, and if the nutrients are not in the right proportion we can add to or take away from the quantities of foods used in the trial ration. Suppose we wish to form a ration from clover hay, ensilage and bran. For a trial ration we might take bran, 8 lb.; clover hay, 6 lb., and ensilage, 40 lb.

By referring to the table we can find the amount of digestible nutrients in 100 lb. of each food, and therefore to find the amount in 1 lb. we must divide the numbers given in the table by 100. Thus we get :

——	Protein.	Carbhydrates.	Fat.	Total organic matter.
1 lb. bran contains	.126	.441	.029	.824
1 lb. clover hay contains	.065	.349	.016	.785
1 lb. ensilage contains	.013	.140	.007	.242
Therefore 8 lb. bran contain	1.008	3.528	.232	6.792
6 lb. clover hay contain	.390	2.094	.096	4.710
40 lb. ensilage contain	.520	5.600	.280	9.680
	1.918	11.222	.608	21.182

Comparing our trial ration with the American standard, we see that it is too low in all its constituents, especially in carbhydrates and total organic matter. If we try to make up the deficiency by means of ensilage or clover hay, our ration will become too bulky ; while if we attempt to make it up with bran the protein will be unduly increased. This would indicate that it is impossible to make a well balanced ration from the food stuffs selected, and the simplest way out of the difficulty would be to select some grain that is rich in carbhydrates and organic matter, with only a moderate amount of protein and fat. Looking over our list of food stuffs, we find that barley fulfils these conditions, while we might also slightly increase the amount of ensilage. We shall therefore add to our trial ration 2 lb. barley and 5 lb. ensilage.

Referring to our composition table we find :

——	Protein.	Carbhydrates.	Fat.	Organic matter.
1 lb. barley contains	.095	.661	.012	.867
Therefore 2 lb. barley contain	.190	1.322	.024	1.734
5 lb. ensilage contain	.065	.700	.035	1.210
Trial ration contained	1.918	11.222	.608	21.182
	2.173	13.244	.667	24.126

As it now stands, the ration is intermediate between the German and American standards, and may be accounted approximately correct.

If we wish to find the nutritive ratio of the above ration we first multiply the fat by 2.2 and add the result to the carbhydrates, thus : (.667 × 2-2) + 13.244 = 14.711. Therefore nutritive ratio is 2.173:14.711, or 1:6.75.

The above is only an example of how the standard may be used in formulating a ration, and from what has been said it will be seen that a great variety of rations may be compounded, which are practically the same in composition, and which will give equally good results. In every case the feeder must be guided by the kinds of food which he has at his disposal.

The digestibility and nutritive value of a food may vary very much, and the feeder must take this into consideration. Especially is this true of coarse fodders, such as hay, straw, ensilage, etc., the grains being more constant. For example, hay that is well cured is more nutritious than that which has become very ripe, or that has been too much exposed to the weather.

Then again, animals vary with regard to the amount of food which they are able to assimilate, making it necessary for the feeder to study the individual animals under his care, and to modify his methods according to results.

It will therefore be understood that while a feeding standard is valuable as a general guide it cannot be blindly followed, and a great deal must be left to the intelligence of the feeder.

In bulletin 38, of the Wisconsin Experiment Station, there are given a large number of rations used by successful American and Canadian dairymen, of which the following are a few examples:

(1) 10 lb. clover hay, 35 lb. ensilage, 2 lb. oat straw, 5 lb. corn meal, 5 lb. bran, 5 lb. oats.

(2) 25 lb. corn silage, 7 lb. mixed hay, 4 lb. corn meal, 5 lb. bran, ½ lb. oil meal, ½ lb. cotton seed meal.

(3) 40 lb. corn silage, 10 lb. timothy hay, 5 lb. bran, 3 lb. corn meal, 2 lb. oil meal.

(4) 40 lb. corn silage, 3 lb. cotton seed meal, 18 lb. corn starch feed.

(5) 30 lb. corn silage, 12 lb. clover hay, 8 lb. wheat middlings, 1 lb. oil meal.

(6) 10 lb. clover hay, 5 lb. timothy hay, 2½ lb. corn fodder, 6½ lb. corn meal, 2 lb. oats, 3 lb. bran, 1½ lb. oil meal, 15 lb. carrots.

(7) 30 lb. corn silage, 8 lb. hay, 5 lb. corn fodder, 4 lb. oats, 2 lb. pea meal.

(8) 45 lb. turnips, 7 lb. wheat chaff, 15 lb. silage, 2½ lb. oats, 2½ lb. pea meal.

(9) 40 lb. corn silage, 30 lb. turnips, 8 lb. clover hay, ½ lb. straw, 3 lb. oats, 2 lb. wheat bran.

(10) 30 lb. corn silage, 12 lb. hay, 10 lb. ground oats.

The above rations are not given as models, and many of them will be found very deficient if compared with the standard, but they are mentioned merely as examples of rations that are being used by successful dairymen, and no doubt many of them could be greatly improved.

BREEDING HORSES FOR PROFIT.

By Prof. J. H. Reed, V.S., Guelph.

Under present conditions the farmer who follows horse-breeding with hopes of fair profit must exercise both care and judgment in the selection of both sire and dam. The market for certain classes of horses is so low that it will certainly not pay to breed them, but for other classes there is still a fair demand at prices which leave a margin on the right side. I think every farmer should keep one or more mares for breeding purposes. In the first place, to be successful, the breeder must consider what class of animal the market demands, as there is no use in producing an animal for which there is not a good demand. For the heavy draught horse, say 1,600 lb. and upwards, we have a limited local and an unlimited British demand, but the animal must be of the size stated and of good quality. Then the market for the pleasure horse, viz., the carriage horse, the large stylish roadster, the saddle horse and hunter, is such as to warrant the breeder in producing them. The breeder must first make up his mind which of the above classes he wishes to produce, then select the dam or dams, and in this he must be careful, always bearing in mind that the first law of breeding is the law of heredity or "Like begets like." All traits of a parent, whether they be desirable or undesirable, are liable to be transmitted to the offspring. Therefore we must be careful that the mare we intend to breed be sound, of good conformation, the desired size, with the desired action and kind disposition. We must not undervalue the dam. Having selected the dams, we must exercise as great caution in the selection of the sire. In both cases we must endeavor to get both pedigree and individuality. If either has to be sacrificed I would sacrifice pedigree for individuality. As to the relative influence of parents, my opinion is they are about equal, provided both parents excel equally in pedigree and individuality. In cases where this is not the case the parent of the better breeding will have the greater influence on the offspring, and as diseases, or rather the predisposition to diseases, are undoubtedly inherited to as marked a degree as conformation, etc., it teaches us that we must be very careful. Should a breeder decide to produce heavy horses, he must first decide what breed will best suit his tastes or circumstances, then select the best dams of that breed he can procure with the means at his disposal, and breed these mares with the very best sires of the breed, the service of which can be had for a reasonable stud fee. He must not become discouraged if his first attempt should fail, as it always has been and doubtless always will be, the experience of breeders to meet with disappointments. But where good judgment has been exercised in the selection of parents, disappointments are the exception. For this class of animal, if of sufficient size and quality, there is an unlimited demand, and dealers are opening up a trade in the British markets and are always ready and anxious to buy at a price to leave the breeder a fair profit ; but we must get the size, as for a smallish animal of this breeding there is a very limited demand at low prices.

We will now speak of the carriage horse. This is the pleasure horse and wanted by the rich man, both in our home, the American and the British markets, and if we can produce this article of sufficient size and quality, the purchaser will give us a good, and in many cases, a fancy price for him. In this horse we must have style, quality and action, and my experience has been that the larger we can produce him without sacrificing any of the above mentioned qualities, the more money he is worth. Here we must also exercise care in the selection of the dam. She must be sound and stylish, with good action, and if not less than 16 hands high all the better. Then we must select the sire, and we must choose the sire that will suit our mare. For sires of carriage horses we have the trotting horse, coach or carriage horse, the Hackney and the thoroughbred, the selection to be made according to the dam. As high and graceful knee and hock action are, we may say, a necessity in the high-priced carriage horse, we must cross with as much certainty of producing these qualities as possible. If we have a mare of sufficient size with considerable hot blood, but lacking action, we must select a sire that excels in this point, as the Hackney or the large, high actioned, stylish trotting horse. In this case the sire will transmit the action, and the dam the size and quality. If the mare herself should be about what we want to produce we can select for the sire a horse of her own class, viz , the coach or carriage stallion, but if the dam should have the necessary size and action but be deficient in quality, we must select the thoroughbred sire. The carriage horse is usually produced by crossing. When we know the qualities the market demands we select the dam and note carefully which, if any, of these qualities are lacking in her, and then select a sire that excels in these qualities, always providing for sufficient size and quality.

Then we have the saddle horse and hunter, which is always in demand, and if we can produce a big fellow with good quality and manners, and up to weight, we can always find a purchaser for him at a fancy price. To produce this horse we must use the thoroughbred sire. This horse has greater prepotency than any other, and therefore we produce by him, out of a common mare, a colt of fair quality. In the selection of the thoroughbred sire, on account of his prepotency, we must be very careful that he is sound, good tempered and of good size. Although we can, with a tolerable prospect of success, breed an ordinary mare to this horse, we must not make too violent crosses. The larger we can get the cross, provided we have quality and manners, the more money he is worth.

The country is at present full of horses, which, although very serviceable animals for ordinary work purposes, are of no commercial value. I refer to the horse that used to be purchased and used for street car purposes. We may ask why we have so many of this ill-bred mongrel ? Simply because the breeder, either through ignorance or from a false economy, has patronized the cheap mongrel stallion. Before breeding can be carried on with financial success the breeder must become convinced that it pays to secure the best horse of the class he is breeding, that can be gotten for a reasonable stud fee. As a matter of fact, operations in horse-breeding have within the last two years materially decreased. I do not think there was more than 15 or 20 per cent. of the usual number of mares bred in 1894. I think this is a mistake ; and the farmer who continues to breed horses of the right classes is the man who will make money, as I think the horse market is bound to improve. The stringency in the money market is accountable for the decrease in demand for the pleasure horse. We hope times will soon become better, but even though the contrary should be the case, the rich man must have his carriage horses, saddle horses and hunters. Those he has at present will not last long, and he must purchase fresh ones, and if we can supply him with a suitable animal he will be willing to give us a good price; and the man who continues to breed during the present, we may say, hard times is the one who will be able to fill the bill when the demand increases, as I think it certainly will. As to race horses at any gait, I think the farmer should leave them alone. Let the millionaire breed and train race horses. It would just about take an ordinary farm to breed and train a trotter, and he has to be so very fast to be valuable for racing purposes it is very likely to prove ruinous for the ordinary farmer to try to produce him.

BREEDING HORSES FOR A PROFIT.

By M. J. Kellam, V. S.

There is no secret or mystery about the breeding or raising of good horses. A person will succeed or fail in this branch, precisely as he devotes intelligence and judgment to its prosecution. Random and ill-directed efforts produce unsatisfactory results, while intelligence brings ample reward. Let a person go along the streets in any of our cities and make a mental note of all horses that pass by. He will see them of many kinds. The massive and slowly moving draught horse, the elegant and stylish carriage team, the dapper and swift-moving roadster, and the diminutive Shetland driven by the children; are all here in the obedience of supply and demand.

In raising horses, as in doing anything else, a man to be successful must have an object in view and be able to assign a reason for what he does. In breeding a mare a man must have a definite idea of what class of horse he wishes to produce, and then breed in a line that will most likely produce that class. It is not every man who is calculated to raise any and every class of horses, and the first thing for a man to do is to make up his mind definitely, what class of horses he wishes to produce. To be successful, an ideal must be bred for. This "hit and miss" kind of breeding will bring neither a contented mind nor a plethoric pocket-book.

The class of mares that one has to start with should bear strongly towards the class of horses he should endeavor to raise. It is folly to start out to raise trotters from half-bred draught mares, or draught horses from trotting bred mares. Yet, we have often seen such ridiculous things done. The first essential, then, is to stick to your class; and the next essential, is always to take the best of the class. If you have a good mare, don't be afraid to breed her to a good horse, and if you have an ordinary mare, and you are going to breed her at all, breed her to a good horse. The colt will be common enough then.

Heavy draught horses being in good demand a few years ago, the farmers rushed in and bred all classes of mares to Clydesdale and Shire stallions, and to such haphazard breeding is due the large number of unsaleable horses which are found throughout the country to-day. Along this line we call your attention to the following, a paragraph which appeared in the *Canadian Sportsman* under date of April 17th:

> "We have written so much on this subject within the past twenty years through these columns, that that we are almost weary of the task, but every now and then we come across an old fool and often a young fool who persevere in their idiocy, and raise a crop of worthless, shabby, loose-jointed brutes, fit only for the glue factory, and a poor quality of glue at that. The only way to knock an idea into the heads of such as they, is to make them green with envy by drilling into their darkened minds the extra dollars they can earn by raising a better class of horses. The almighty dollar is the only lever that can move them, and through its mighty influence there may be some chance to convince them of the error of their ways. When that fails to convince them, the case is hopeless. During the past winter the farmers all over the country who owned plugs, were scurrying round trying to find buyers for them at any price, and meeting with no success, while on the other hand buyers were hunting all over for first-class drivers, saddlers, and carriage horses, and when they came across them were willing to pay good prices. It is stubborn facts like these that tell the tale, and the man who has not sufficient intelligence to heed the lesson is only fit to be a hewer of wood and a drawer of water."

This is pretty strong language, but the editor of the *Sportsman* evidently knows what he is talking about. That it pays to breed the right class of horses, is the only argument likely to influence the matter of fact class of men who engage in the business, and no better evidence is required that it does pay to raise the right sort, than the prices received for the horses sold. One of the most intelligent farmers in the western country received the following prices for the horses he had sold for some years :

Pair of geldings, 5 years	$500
Brown mare, 4 years	225
Bay mare, 4 years	210
Bay gelding, 3 years	190
Bay gelding, 4 years	225
Chestnut mare, 4 years	255
Chestnut gelding, 5 years	270
Pair of brown mares, 4 and 5 years	550
Chestnut mare, 4 years	240
Grey gelding, 4 years	185
Black mare, 4 years	170
Bay gelding, 5 years	230
Bay mare, 4 years	200
Total for 15 head	$3,550
Average per head	$236

This is the sort of evidence that is worth presenting. It is, in fact, the most convincing of all proofs that it pays, and pays well, to breed the right kind of horse.

To begin with, then, let us take the best mares we have or can obtain, and if we can have those which have been bred from selected, so much the better. The mistake is often made of raising a colt from an old mare, because she has been a good mare, and for that reason could not be spared when in her prime to raise a colt. The greatest care should be exercised in the selection of a sire. Like produces like often beyond the first generation, so we should use a sire whose qualities have been well established in his ancestry ; here is where the importance of pedigree is manifest.

The importance of good breeding cannot be exaggerated unless we go to the extent of saying, that a good pedigree should cover the defects of an inferior animal. The old adage, "horse first, pedigree second" should always be borne in mind. Some persons, even amongst those most intelligent in other points, will be found to underate the importance of pedigree. Without keeping account of the breeding of meritorious animals, no progress can be made, and a pedigree is simply a record of the accumulations of merits of ancestors of one animal. Where merits of one kind are accumulated generation after generation, those merits grow at last into characteristics of a fixed type of some special merit. So, although the size, shape, appearance, action and disposition of an animal should always be first borne in mind in the selection of a horse, almost equal to this should be his inheritance of merit from his ancestors as secured by his breeding. The best bred horse is as a rule the best in every way.

Too large a proportion of the horse stock of this country are unsound. This is probably due to the fact that their ancestors near or remote were unsound. An infirmity once introduced, is liable to keep cropping up for several generations. It will sometimes disappear for one, two, or three generations and then may break out again. It is a well known fact, that a great many of the infirmities of the horse are hereditary. By saying that they are hereditary, we do not mean that the young animal is afflicted with those infirmities at birth, but its conformation is such that it is predisposed to them, and with the ordinary exciting causes will very likely suffer sooner or later from these infirmities. There is ample proof of this, but we will cite but one case, that of Lexington, one of the greatest race horses and sires America ever produced. He was afflicted with blindness, and a large number of his progeny became blind. It is a good plan not to breed an inferior mare at all. There will be enough inferior colts from good dams and good sires. Whatever you do, do not hunt for cheap service fees. We do not believe in unreasonable service fees, but there are very few high priced stallions whose service fees are too high, while there are thousands of cheap stallions whose fees are shamefully high. As a rule all exceedingly low stallion fees are extremly high. We do not know a man who is so poor that he can afford to patronize a cheap stallion. A poor man must breed for profit and there is no profit in breeding to cheap stallions.

It ought not to be necessary to keep drilling away on such a subject, but there is no denying the fact, that in some sections the farmers are still continuing their folly, and it behooves all who are interested in the improvement of the horses of this country, to keep up the good work of knocking hard facts like these into their minds.

The whole matter can be summed up in a very few words. Start right. That's the point. Get good blood and then take care of it. You will be astonished at the result. Invest the difference of a few dollars between the cost of service of an inferior horse and that of a good one, with the confidence that it will return to you again two, three or four fold. One man can raise valuable horses as well as another. There is no patent or copyright covering this industry. The field is open; do not let the penny before your eye hide the dollar in the distance.

BREEDING AND FEEDING OF CATTLE.

By Thos. McMillan.

A study of the agricultural industry of this Province leads us to believe that in order to be thoroughly successful we must make a specialty of some particular departments of the farm. In this respect we are simply following the example set by manufacturers. In these lines the march of invention has been so rapid and competition so keen that, in order to succeed, manufacturers must concentrate their forces and confine themselves to certain particular lines. So is it with the farmer. It is an old saying and a true one, that if we would wish to succeed, we require to have some definite object in view and in our operations endeavor to attain that object. The first thing which every farmer must decide for himself, is, in what particular lines he shall engage? There is plenty of room for a choice. In glancing over this Province we find some farmers engaged in sheep rearing, some in hog breeding, some in dairying, some in beefing, and so on; and we find men in all these departments who have been successful. Therefore I consider the first great requisite to success depends upon ourselves, and requires that we must carry into our business the necessary skill and attention, which, when properly directed, is certain to give satisfactory returns. In the department of the breeding and feeding of cattle, we first require to put ourselves in possession of a number of good, serviceable, healthy cows—cows which will not only return a profit at the pail, and produce a well-formed and healthy offspring, but which, when no longer required for these purposes, will possess the inherent quality of taking on flesh easily and rapidly, and returning a satisfactory price at the block. Some of the main characteristics of such an animal are the fine, clean-cut head and full, mild eye which indicates a good and profitable feeder, good and straight in the back, broad, full, and deep in the chest, well sprung and deep in the rib, full in the flank and fore-flank, smooth over the kidney, with the buttocks reaching well down to the hocks, and that fineness of bone which indicates a fineness and smoothness of the carcase generally. Apart from these features, one of the main points in a good beefing animal is what is called a good handler (an animal with a nice, soft skin covered with a fine coat of mossy hair.)

Once having secured a few such animals, our aim should always be to increase the quality of their excellence and never allow them to deteriorate. To accomplish this we must never breed from any but pure bred males—animals of good individual merit with pedigrees which can be traced back through a long line of notable ancestors—as such animals are much more likely to possess to a greater degree the prepotent power to transmit their own excellent qualities to their offspring.

With many farmers it seems to be a common practice to settle in their own minds from which cows they intend keeping their next year's crop of calves; these they may perhaps mate with a good male animal, and the balance of the herd is often bred to a scrub for the sake of fifty cents or a dollar in the service fee. This is a most ruinous practice, and will never yield the most satisfactory returns, as it is a settled principle in stock breeding that "like begets like," and that any one conception must affect a succeeding one, either beneficially or injuriously as the case may be. Another great mistake, and one which is not confined to the general farmer but often pursued by breeders of thoroughbred stock, is that of breeding from young males from one to three years old, and then, just when they have reached an age of sufficient maturity when we might expect they would be able to transmit to their offspring that health and vigor of constitution which it is most desirable to have, they are sold to the butcher. This practice I believe to be one of the causes of the general complaint among farmers that their animals are not so healthy and vigorous as they were years ago. Once having decided to follow a proper system of breeding in order to hold and improve the good name which we bear for the quality of our beef, we must determine to make war upon all scrub animals. They are a positive sign of want of thrift in every barnyard where they are to be found. They are an unprofitable commodity to have, and the narrowing margin of profit will not allow us to handle them. We must not close our eyes to the fact that there is still room for a vast improvement in the quality of our herds; and when we know that the same quantity of food which will put two pounds additional weight on a scrub animal will put three pounds on a well-bred grade, it is a matter of the first importance that farmers should endeavor to rid themselves of all poor animals. Let me cite one experiment in support of this contention. Mr. Britton, at one time a feeder of cattle in Toronto, gave evidence before the Agricultural Commission in 1873, regarding some experiments he had carried on. In one, he bought 103 scrubs north of Peterboro', paying for them 2½ cents per lb. He bought another lot of well bred grades near Goderich for from 3½ to 3¾ per lb. He fed the two lots for a period of seven months. Although he did not weigh their feed, he stated the scrubs consumed much more than the grades. At the end of seven months he found the scrubs had gained an average of 130 lb. each, while the grades had gained an average of 270 lbs. each. When selling he obtained $4.63 per hundred pounds for the scrubs and $5.37½ for the grades; so that notwithstanding the fact that the grades cost him from 1 to 1¼ cents per lb. more than the scrubs, they were the more profitable animals to handle. Mr. Hobson, of Mosboro', and Mr. Clay, who was for a length of time connected with the Bow-Park Farm, have each given similar testimony; and I may also say that this testimony is borne out by our own experience during the past twelve or fifteen years. Although good breeding will do a great deal, yet a judicious system of feeding will do just as much; and if we wish to attain the best results we must adopt such a system of feeding as will bring our animals to maturity as early as possible. Therefore the one great point which farmers should never grow weary of impressing upon each other, is the great folly of allowing young animals to lose flesh. There is no mystery in the growth and rearing of animals. Every pound of additional weight put upon an animal represents so much food and is a certain cost to its owner; in fact, whether the animal is allowed to increase, remain stationary or decrease in weight it is costing its owner so much every day. Thus it is evident that the only profit to be obtained from the food consumed is through the increase in weight which we may be able to obtain. Hence the utter ruin which must and does result from the current practice of allowing our young animals to run on bare pasture during the summer and run round straw stacks in winter. Such a system not only retards the present growth of the animals, but it so injures their digestive system as to render them unable to digest their food profitably when being fattened. And this, too, is the great reason why very many farmers are compelled to feed their beefing cattle such heavy grain rations while stall-feeding them. If our young beefing animals are kept and fed properly, they should in a measure be nearly ready for the butcher at any time, and when we know that more gain in weight can be obtained from the same amount of food the younger the animal is, it becomes our duty to furnish our young animals with such full and appropriate rations as will bring them to maturity as early as possible. Every individual who knows anything of the nature of animals, knows well, that while the animal is young and in the rapid stage of its growth, its digestive and assimilative functions are most active ; the percentage of waste in its system is much less than after it reaches maturity, and that the older it becomes, even before it reaches maturity, the more food it requires to supply this waste. Therefore the same amount of food will produce so much more weight when the animal is young than afterwards, and hence it is our duty to mature our animals as early as possible, as early maturity offers the only safe system of profitable beef production. In outlining a system of feeding to be followed, let us start with the young calf, which we like to have dropped sometime from the month of November on till spring. Although, no doubt, the sleekest and best calves can be obtained when they are allowed to suck the dam, yet I believe the more profitable method is to milk the dam and feed the calf from the pail. We separate the calf from its dam at birth, as it can be done with less trouble and annoyance than at any future time. Keep the calves separate until they have been taught to feed well. As we invariably find, if two or more young calves are allowed to run together they will learn to suck each other after receiving their usual milk ration. In the case of the male calves which we intend to castrate, we do so as soon after birth as possible, and the one straightening-up process will do for all. We have never found any injurious results from performing the operation at this time ; whereas if we wait till the animal is three or four weeks old, as is generally the practice, it will often be a week or ten days in coming round to be as frisky as usual again. For the first two or three weeks we feed the young calf upon new milk ; then we introduce a skim milk ration at noon, in which is mixed a little boiled flax or oatmeal. We also gradually change from the new milk ration morning and evening by mixing with a little skim-milk, supplemented with a little boiled flax or oatmeal, care being taken always to heat to milk temperature, as we consider it very injurious to feed cold milk. We also keep clover hay in their stall and crushed peas and oats in a box to which they have access. If they do not take readily to the meal, feed from the hand, and when they have learnt to eat the dry meal, withdraw the grain mixture from the milk. Gradually supplement their meal ration with roots and corn silage. In all our experience we have found no fodder to which young calves will take more readily than corn silage. It seems to give them a fine sleek skin and develops their digestive system admirably. In fact, our experience in the feeding of silage to calves leads me to believe Mr. Stewart in his notable work on feeding animals when he says, " Corn silage must take the place of the steaming and cooking of foods which is largely practised in the older countries. Its succulence is greater than can ever be attained by the steaming of foods ; and it must approach in digestibility very nearly that of green grass eaten in pasture." When the spring growth starts, so that we have grass, let the calves have some. If we have a grass plot near the barn we let the calves on to it ; if not, cut the grass and feed them in a loose box. Young calves should never be allowed to roam over large fields, or be exposed to the scorching heat of a summer sun, or have their usual grain ration neglected. When the fall season comes round they should never be exposed to inclement weather, but by this time be comfortably placed in winter quarters. Feed judiciously the first winter a ration of grain with roots or corn silage, cut feed and clover hay. If the young animal is well fed and properly cared for the first year of its existence, its growth and condition as a thriver is determined ; it forms the habit of laying on fat, and with proper treatment we have very little trouble in keeping it in good condition after this time. During the second summer turn upon grass, and if, on account of drouth or other cause there is not a plentiful supply of pasture, this must be supplemented by some soiling food. Thus we will invariably find our animals coming into their winter quarters in good condition, and with liberal feeding over winter they can easily be made ready to ship to the British market at from two to two and one-half years of age. In fact the best feeders in our country who fatten cattle of their own breeding, make a practice of having them ready to ship not later than this age; although there is still a great many, I may well say a large percentage of our farmers, who still persist in raising their animals to two and one-half and often three and one-half years of age, and then selling them as stockers. I need scarcely say this is a most ruinous system. All these farmers require to do to have their animals ripe enough for the beef market, is to feed a little more liberally and they would be doubly repaid for the extra amount of food supplied; for when we know that it takes about two-thirds of a full ration for the food of support, or to supply the waste of the system, it becomes evident that the only profit to be found is by feeding the remaining third. To show how much cheaper beef can be produced the younger the animals are, let me quote an experiment carried on by the Groff Bros. of Elmira, who, in their day, were among the most successful feeders in Ontario, carrying off the highest premiums both in this country and Chicago: "Two steers bred by Groff Bros. weighed at 12 months 1,000 lbs. each and cost $34 67 or $3.46 per hundred lb. The same steers gained during second 12 months 600 lb. each and cost $52.13 or $8.68 per hundred lb. The same steers gained during third 12 months 650 lb. each and cost $81.50 or $12.53 per hundred lb."

To corroborate the above I take one statement from Mr. Stewart "On Feeding Animals": Average cost per hundred lbs. of 9 animals at twelve months of age, $3.39. Average cost per hundred lbs. of 9 animals from 12 to 24 months of age, $7.97. Average cost per hundred lbs. of 9 animals from 24 to 36 months of age, $12.54.

To show another phase of the ruinous practice of raising animals to 2½ and 3½ years of age and selling them as stockers, careful analysis and experiment proves that a young growing animal will take from 25 to 50 per cent. of the elements of fertility which its food contains to build up its system in the shape of bone and muscle; while after this time during the fattening period it will return fully 95 per cent. (almost all) of the elements of fertility which its food contains back to the soil through the manure; so that farmers who follow such a system are simply manufacturing so many machines out of the fertility of their farms, and then handing them over to their more fortunate neighbors, to use for a most beneficial purpose. Although, as I have stated, we have raised a few animals each year, yet our practice, largely, has been to buy these very animals which other farmers will persist in selling. In pursuing such a system, great care must be taken in selection. Buy good animals and those in good condition. Stockers, which have grown to be two or three years old and have not formed the habit of taking on fat, are undesirable and seldom prove remunerative. Care must also be taken to have them stabled before it gets too late in the fall, or they will lose flesh. When the weather is such that we are subjected to a succession of night frosts, it is time to have the animals stabled. Every farmer should have some settled system of feeding, which he intends to pursue, and for this purpose have his fodder prepared, so that his animals can be fed regularly and liberally from the start. When feeding, we should study the nature of the animals we feed. All ruminants are possessed of large stomachs, calculated to digest bulky and fibrous food, therefore they should never be fed upon concentrated grain alone, but always have it mixed with bulky fodder, such as cut hay or straw, corn silage, etc. In the feeding of grain it is much more profitable to give a mixture, rather than confine our stock to a single variety. For instance experiments have proven that 8 lbs. of bean meal will give 1 lb. increase in live weight, that 8 lbs. of pea meal will give 1 lb. increase in live weight, 5 or 6 lbs. of linseed cake will give 1 lb. increase in live weight. But 4½ lbs. linseed cake and peas in equal proportion will give 1 lb. increase in live weight, and 3½ lbs. linseed cake and beans in equal proportion will give 1 lb. increase in live weight. Therefore it is evident how much more profitable will our results be by feeding a judicious mixture, than by confining our operations to a single variety. Great regularity should be maintained in feeding. It is surprising how readily animals will learn to know just when to expect their different rations. If any of these are withheld for an hour or so, they will rise and remain restless until their food is supplied. Cleanliness and tidiness should also be encouraged and enforced. Animals should be given at each feeding only what they will lick up clean. As far as possible the same feeder should be allowed to feed the animals continually, and above and beyond all, if we desire to obtain the most profitable result from the food consumed, we must accompany the food with the kindest and most humane treatment. There is no place in a cattle stable for a passionate man. Animals do not thrive if excited and irritated. They must be taught to regard their feeder as their best friend.

RAISING HOGS FOR MARKET.

By J. B. Muir.

Breeding and feeding swine is not considered an honorable occupation by many Canadian farmers. Others are of the opinion that the pig is a nuisance, as he is constantly in mischief. But the pig is an honest fellow, he pays in proportion to the way he is bred and fed.

In raising hogs for market, we should have a definite object in view. This object should be to produce the hog that will realize the highest price in the market at the least cost for production. If your market requires heavy, fat hogs, the Berkshire, Poland China or Chester Whites are suitable. As a rule the shorter breeds of hogs can be produced at less cost than the longer sided fellows. The greater the distance the extremities are from the heart, the greater will be the food required to maintain the animal in life.

In selecting the breed, see that the male animal has a good pedigree, that he is a typical animal of the breed he represents, that he is descended from animals that have been in the habit of producing large litters, and that he is well developed for his age. The sow should be selected for rapid development, regular breeding, producing large litters and gentle disposition. The brood sow should be retained for several years, as old sows produce stronger pigs. She should be allowed to raise two litters annually. If we wish to have vigorous, healthy young pigs the brood sow should be carefully fed. During summer there is no trouble as the sow usually has sufficient variety in her food. With the early spring pigs there is often heavy loss from the fact that the sows are given too concentrated a food and not sufficient variety. No one variety of grain contains all the elements of animal life in the proper proportion. Many farmers feed their brood sows largely on peas during the winter, with the result that the young pigs are flabby and weak, and very often live but a few hours. Milk, roots and oat chops, bran or shorts, with access to earth or sods, make a well balanced ration, and should give good results if the sow has exercise daily.

The young pigs require a warm, dry pen, and should be attended very closely during the first few hours to see that all are suckled and that none are chilled. Cut straw or chaff makes the best bedding, and only a limited quantity of it should be used at first. Poles should be arranged around the walls to prevent the little fellows from being squeezed by the dam. When a week old they should be encouraged to take some exercise on fine days. This makes them stronger and prevents them from becoming too fat internally. Castration should be performed when the pigs are six or eight days old.

When six weeks old they should be weaned, which is best done by removing all at one time and returning them after twelve hours and again after twenty-four hours. This makes a gradual change and is much easier on the dam. The little fellows should average from twenty-five to thirty pounds at this age, and if they have been taught to eat previous to weaning they should continue to grow as though nothing unusual had happened.

Milk with oat chop and roots makes the best ration we have tried for young pigs. If the oat hulls are removed by a sieve for the first few days they will eat the food up clean. The trough should always be cleaned out before giving the next meal. We find it an advantage to feed the young pigs four times daily until they are at least ten weeks old; after that age three meals daily are sufficient. Regular feeding is just as important with pigs as with any of our farm animals. At ten weeks old they should average from forty to fifty pounds, and after that age, if properly fed, should increase from one and one-half to two pounds daily. For winter feeding we find that about four times the quantity of roots by weight mixed with chopped grain gives us the best results. The grain is chopped fine and mixed with pulped roots, and the whole soaked for twelve hours before being fed. Salt is added at the rate of one ounce for every one thousand pounds of live pork daily. When milk is plentiful we have more rapid growth and the pigs keep healthier and more vigorous. In his natural state the pig swallows considerable earth daily, and this should always be provided for winter feeding.

To have the best results the pens should be cleaned out regularly, as the pigs rest contented in a dry, clean pen, and are always on the move when the pens are wet. The troughs should be arranged so that each pig will have an equal chance. A pole along the centre of the trough to prevent them from putting their feet in saves a large percentage of the food. In summer, feeding clover or green peas will take the place of roots, and if milk is plentiful very little grain is required. It should be our aim to force the pigs to mature as early as possible. The younger the pigs are when they arrive at market weights the greater will be the profit. The food of maintenance increases with the size of the hog, while the daily average gain is just the reverse. From careful experiments extending over three years' feeding, we have ascertained that a newly weaned pig weighing from twenty-five to thirty pounds will increase in weight at a cost of two and one-half cents per pound. When ten weeks old and weighing fifty pounds it will cost three cents per pound of increase. At fifteen weeks and an average weight of one hundred pounds, the cost of production will rise to four cents per pound of increase. These experiments lead to the conclusion that we should make the average daily gain as great as possible, and also that when pork is selling at low prices we should sell the hogs at lighter weights. Hogs weighing from one hundred and sixty up to two hundred pounds have taken the top prices during the past two years. These can be produced at an average cost of four and one half cents per pound live weight. As to whether it pays the producer to sell the hogs alive or dressed depends on the markets, the season of the year, and the condition of the animals.

Our experience is that buyers make too great a difference in the price of pork live weight and dressed weight. We have been able to realize the best prices by selling the pork dressed. Buyers meet with so many producers who have their hogs over fed when selling live weight that they reckon on a higher percentage of offal, and this discriminates against the honest producer. With Berkshire pigs weighing from one hundred and sixty pounds and up to two hundred pounds, we find a difference of from seventeen to twenty per cent. between dressed and live weights. With this data you can very soon estimate which way it will pay you best to sell.

POULTRY ON THE FARM.

By W. T. Gibbard.

The hen has been the most neglected animal in our yards, being kept as a necessary evil to supply the household with the required eggs for home purposes, and not as a source of profit, as in the case of the sheep, hog and cow. When I lay before you the export of eggs from our Dominion for the year 1893, as compared with sheep, butter, rye and oats, you will comprehend where the poultry industry stands :

3,918,017 doz. eggs exported, valued at		$1,098,823
Poultry, alive and dressed		62,257
Total value		$1,161,080
331,278 sheep exported, valued at		$1,429,067
Butter, total exports		1,273,094
Oats	"	2,249,938
Potatoes	"	295,221

These figures will suffice to show how important a part the subject of my paper plays in the products of this land, yet the industry is only in its infancy and has been the most neglected of any. France is the only nation that recognizes the poultry and eggs trade as a source of wealth to the nation, and protects and encourages it, as any other business which brings a revenue and a better condition to its citizens. Their trade has grown from year to year, until it has reached gigantic proportions. After meeting its own requirements, it supplies the British alone with $13,000,000 worth of this class of food. During the last year or so, our governments have been turning their attention to this branch, and now at the experimental farms at Ottawa and Guelph, departments for poultry are established and specialists are employed to test the qualities of each breed; how to rear, care for and feed—and are publishing reports of the same and sending them out among the farmers. Our Provincial Government published last year 20,000 copies of the annual report of the Poultry Association, and this year the Association is going to ask them to get out 50,000, so that every person interested can get the results of our experience.

How to make poultry-raising profitable. First, select some breed that will give the best results as to egg production and market fowl, maturing so as to produce broilers during the summer months when the highest prices can be obtained. I consider the Leghorn and Spanish classes the best egg producers. Where eggs alone are the object, you can safely select either of them, but this is not the sole object desired. English and American writers recommend the Plymouth Rocks (white and barred), silver-laced and white Wyandottes, as the general purpose fowl for the farmer, being good egg producers and maturing into broilers in from eight to ten weeks, and will always command the highest prices in the city markets. Too much care cannot be taken in selecting stock, as there are laying strains in fowls as well as milk strains in cows. Eggs for setting should be chosen from hens that are the best layers, not from those that are given to setting. The progeny will, to some extent, be like its ancestors. See that the flock is headed with the best male bird obtainable, as a good flock of hens will deteriorate if mated with a scrub, while a good male will improve a poor flock.

If we want eggs in the winter months, when they are scarce and command the highest prices, chickens must be hatched early. Have the buildings facing the south, and built warm enough, so that frost will not freeze the combs and wattles. Give plenty of sunlight and do not crowd too many in the pen, for the old adage of the woman and the medicine, will not work in poultry raising, "If a little is good, more is better." Have lots of grit on the floor, and spread fine chaff or clover over it. Throw part of the feed on the floor, so that they will be kept busy. A lazy hen will not lay many eggs. If possible have your house convenient to a light sunny shed, so that they can run there on warm days, and above all, see that the house and all appliances are kept scrupulously clean. Build roosts about thirty inches from the ground, and place a platform underneath to catch the droppings, so that they can be cleaned off three or four times a week, and stored, to top dress meadows. Use plenty of petroleum on the roosts to kill the lice, which are among the greatest enemies to the poultry raiser. See that the setting hen is kept free from lice by thoroughly dusting her and the nest with insect powder. Do not take the chicks out of the nest for from eighteen to twenty-four hours after they are hatched. Feed for the first few meals hard boiled eggs, chopping eggs and shells fine; feed every two or three hours. Later feed oatmeal, cornmeal and shorts, mixed with fine cut meat, wet with milk and baked. This is one of the best foods that can be given. Also provide green clover, cabbage or lettuce and some fine grain. Treated thus, you will be surprised how the chicks will thrive. When they are old enough, select what cockerels and pullets you do not intend to keep and shut up, feeding on the best fattening foods, such as cornmeal and wheatmeal scalded, adding some boiled potatoes until they are in condition to market, when you will be surprised at the prices they will demand, bringing from 50 to 60 cents per pair on the town markets and from 75 cents to $1 in the cities.

Finally. (1) House your poultry in comfortable, light houses.

(2) Select some good standard breed, and do not inbreed, but add every year or two a fresh male bird.

(3) Feed and water regularly, but do not feed more than they will eat up clean at a time. Give a variety of food, not neglecting to supply lots of sharp grit and green food.

(4) Look out for lice. This is the greatest annoyance the fancier has to dread, as a lousy hen cannot be profitable.

(5) Keep only young, active, prolific layers, and select from them to breed from. Kill all the non-layers as they are eating up the profits.

(6) Keep no male birds with your layers.

(7) Last, but not least, take the hen in your confidence, and keep a record for one year, giving her the same care you do the cow, and you will find the hen the most prolific source of profit.

ORCHARD AND GARDEN DEPARTMENT.

CARE AND MANAGEMENT OF THE ORCHARD.

By A. E. Sherrington, Walkerton.

In preparing this paper my intention is to touch lightly on all the points in the cultivation, picking and packing of the apple for market. To those who intend planting new orchards, the first thing is to select a good, dry, rich and mellow soil. If not naturally dry it must be made dry by under-draining, for no tree will live, let alone thrive and produce a paying crop, with the roots standing in water. It is a matter of opinion whether spring or fall planting is best, but I prefer the spring. In selecting stock plant nothing but first-class winter fruit, and have the trees delivered in the fall. Heel them in over winter. Plant in the spring as soon as the ground is dry. Plant not less than forty feet each way, setting the trees not deeper than they were in the nursery row, first cutting off with a sharp knife all broken or damaged roots; then spread out the roots and cover with nice, fine soil, mixing it with the roots and packing firmly, leaving the last few shovelfuls loose. By doing so it will prevent the ground from becoming hard and dry. Then cultivate some hoed crop every year for eight or ten years, with a liberal dressing of wood ashes and barnyard manure. By this time bearing will be commenced, when cropping should be discontinued. The cultivation ought to be continued, however, but not so deep—just enough to keep the ground open and free from weeds; after that manuring every alternate year will be sufficient.

The pruning should commence with the planting of the tree, when no other instrument will be needed than the pruning knife with the assistance of the thumb and finger. So prune lightly and annually as nearly as possible when growth is beginning, in order that the wounds may heal over with the least possible delay. Prune in winter to encourage growth of wood; prune in summer to discourage formation of wood, and to induce fruitfulness.

So much for the young orchard. We will now suppose the farmer has an old orchard, or an orchard that has come into bearing, and which has been partly neglected. Why should it be neglected? I claim that there is no other part of the farm that will give as good returns for the same amount of outlay.

In the first place the majority of orchards have too much wood in them, and the land is too poor to produce first-class fruit. Nothing but A1 fruit will pay to send to Europe, and this is the market that Canada depends on for her surplus. I would therefore recommend that the trees be well pruned, not cutting out very large limbs, but pruning out the smaller ones so as to admit plenty of light and allow the air to circulate freely through the tree, so that fruit and foliage may dry off as quickly as possible after a shower of rain. Dampness is one of the principal causes in bringing about what is called the apple scab.

Then in order to make the tree produce it must be nourished, and I reiterate what I already pointed out in dealing with the young orchard: Put on a liberal coat of manure at least every second year, and do not in any case sell your ashes to the pedlars, for a few paltry pieces of soap. Indeed I urge upon you not to use your ashes for the manufacture of soap for home use even. If you have an orchard at all, you will realize more from it by putting it on the orchard than will buy ten times the quantity of soap you make. I would also advise that the trunks and large limbs be washed with a weak lye. The good results of this will soon make themselves apparent, not only by destroying eggs of insects, but in the thrifty appearance of the tree. Hogs or sheep should have the run of the orchard until the apples have got their growth. The animals in eating the fallen fruit will destroy a large number of the first brood of the codling moth. If the orchard is in sod I would leave it so that the life-seeking fibres will be near the surface, and cultivation would necessarily destroy them. My own observation has convinced me that all orchards in pasture, and having the run of sheep or hogs, produce larger yields and larger fruit of a superior quality. Our only remedy for insect foes and scab, is to spray, but *do not spray when in bloom.*

We have ten times too many varieties. I would strongly urge upon the farmers and fruit growers to lose no time in grafting out all fall varieties, with perhaps the exception of Duchess of Oldenburg, which seems to do well and is good for home use, and are sometimes in demand in their season for the United States market. But outside of this variety everything else that is softer than a King or a Twenty Ounce Pippin should go. The sooner they are supplanted the better. The days of Culverts, Jennettings and all such varieties, as far as exporters are concerned, are over. Red Astrachans and such sorts have never been any use to ship. It is useless for the farmer to foster these, as in course of a few years by careful grafting he can have stock growing in their place that will always command a fair price from the shippers.

The losses on fall apples last season to both farmer and shipper ought to be sufficient argument to establish what I have pointed out in this respect. Grafting is what is needed, and why should the farmer let a season pass without carrying out this much needed reform.

Picking. First procure a couple of good light ladders. Wooden or tin pails should in no case be used; baskets are the right thing, as they are cheap and lighter to handle, and do not bruise the fruit. All the apples for market must be picked from the tree by hand, and ought to be handled from the time the hand touches them on the tree until they are packed in the barrel, with the same care as if they were eggs. All apples that fall from the tree should be kept for home use, as they are unfit to ship. Although they show no bruise at the time, it will show up after a little, and they will only make more culls if put in the same place as the shipping apples. Spotted and wormy apples should likewise be discarded, or any that are in any way faulty or imperfect. The farmer is the one who ought to do most of the culling. He will study his own interests in picking his apples from the tree, and will so select them that nothing but perfect stock will meet the packer when he comes along to barrel them. He will have less board to supply to the packers, as they will require less time to get through their work, he will have more apples sold, for if the culling has been done right, the packers will be less liable to throw out good apples, and he will also have the satisfaction of being a factor in redeeming the reputation that Canadian apples have held in European markets, which for the causes I have named has been threatened with ruin during the past season. The right time to commence picking is when the seeds are about two thirds black, or when the stem parts readily from the tree. Put the apples when picked under cover, so as to protect them from both sun and frost.

SMALL FRUITS.

By D. W. Beadle, Toronto.

The term *garden* seems to convey to most minds a vision of a small, nearly square piece of ground, carefully fenced in, that must be dug over with the spade, harrowed with the hand rake, cultivated with the hoe, and seeded by hand. Imbued with such an impression of the demands of a garden upon both time and labor, it is not surprising that farmers have felt that these were too great, and consequently there is practically no garden on most farms. That in towns and villages gardens must be of moderate dimensions, requiring for the greater part hand tillage, is a natural consequence of their necessary limitations ; but on the farm no such necessity exists. There the garden can be laid out in such shape that the work of tilling may be nearly all done with the usual farm implements. It can be made of such length that there shall be no waste of time by too frequent turning about and of sufficient breadth to admit of the rows of plants being far enough apart to allow of the use of the one horse cultivator. In such form the ground can be broken up with the plow, pulverized with the roller and harrow, planted in rows four feet apart, cultivated with the scuffler, and require no more hoeing and hand-weeding than a crop of corn, or of turnips or mangels.

But it is said that even this is just so much added to the work of the farm, and we already have all that we can do, so that there is *no time* for the cultivation and care of a fruit-garden. Very well. You have all the time there is, and it is just a question of how it shall be used. Of one thing be assured : that a well supplied small fruit-garden will always be a source of comfort and enjoyment to your family, especially to the children, to whom it will be a strong link in the chain of endearments that bind them to the home on the farm. As the children become able to do something in the way of out-door work they can easily be induced to gather the fruit, and to assume, according to their strength, their share in the care of the plants. If allowed to sell the surplus after supplying the home consumption, and to retain the proceeds or a fair proportion as their own pocket money, the children will not only be gratified, but, if judiciously guided, will be learning important lessons of a business nature that will be of material advantage in after life.

After all it is not to be expected that every farmer, no, nor even half of the farmers, will plant a garden of small fruits. Although convinced that it would be a gratification to the family, that the physician is truthful when he says that the free use of these fruits in their season is conducive to good health, and might often save a doctor's bill ; yet, after all, they will largely go on in the old way, perhaps intending some time to have such a garden, yet to them that time never comes. It is just this that gives to the wide-awake farmer his opportunity. Supplying his home liberally, he finds he has a surplus to sell to his less enterprising neighbors ; the small fruit garden becomes not only a source of gratification and health to himself and family, but also of a very satisfactory pecuniary income. This is no picture of the imagination—it is an actual experience of persons who could be named.

The Strawberry.

This is the first to ripen of our summer fruits, coming at a time when the apple has been for several months our only fresh fruit, it is not merely an agreeable change, grateful both to the eye and the palate, but also by its peculiar acids supplying a needed variety in our diet Nor is it such a task to grow strawberries as is often imagined. Planted in rows far enough apart to run a scuffler between them, cropped for two seasons, and then plowed under, gives the best fruit and the largest yield with the least labor. By selecting strong plants from vigorous runners and planting them to produce their first crop at the time when the previous planting has been turned under, a continuous succession of full crops will be secured.

SOIL AND PREPARATION. Any fertile, well drained soil, gravel, sand or clay, will do not only for strawberries but also for any and all of our small fruits. By well drained, surface drainage is not intended. When water does not soak readily into the soil and pass away through the sub-soil, but runs off by surface channels, much of the fertilizing benefit of the rain is lost, and when the rain-fall is considerable some portion of the fertility of the surface soil is also carried off by the water. This is true not of the fruit garden only, but likewise of the whole farm. The wideawake farmer will be sure to underdrain as fast as possible such portions of his farm as have an impervious sub-soil, knowing that the whole cost will in two or three years be fully repaid.

In selecting ground for strawberries it is important to choose such as is not infested with white grubs, nor full of weeds or weed seeds. A crop of turnips, mangels, or carrots, that has been well fertilized and kept clean, is an excellent preparation. There is precious little danger that you will make the ground too rich for strawberries, or any of the fruits. A top dressing of unleached ashes at the rate of fifty bushels to the acre is a most valuable fertilizer for all of our fruits. Plow the land in the fall, in the spring pulverize the surface with cultivator and harrow, if the soil is a clay. If sandy plow in the spring. In neither case bury your fertilizers deep, but keep them near the surface.

PLANTING AND CULTIVATION. In our climate we have found that the spring is the best time to set the young plants, doing it as early as the season and state of the soil will admit, which will be as soon as the young plants on the runners show signs of starting into growth. These should be taken up with care so as to preserve all the roots possible, and as you intend to cultivate with a horse, set out in rows four feet apart and about eighteen inches apart in the rows. The operation of cultivating will naturally draw the runners into the row, so that by judicious handling of the cultivator a full matted row will be obtained in the fall. The cultivator (scuffler) should be used often enough to keep the surface between the rows mellow, and not so deep near the plants as to disturb the roots If weeds appear do not let them get any headway. It is much easier to run the scuffler and kill them just at the time when they appear above ground than afterwards. Unless the land is weedy the plantation can be left to yield two crops. The few fruits that will appear during the summer immediately after planting are not reckoned as a crop. It seldom pays to allow the old plants to remain longer ; the berries will be small, weeds that live over winter and grasses will get into the rows among the plants, so that the best course is to plow the old bed under, manure the ground and plant it to potatoes. The young bed, set out the previous spring, as already suggested, should be the source of supply.

WHAT KINDS TO PLANT. This is the most difficult question to answer with a word, and yet it is very important to get a variety that is sure to thrive in your soil and exposure. If any of your neighbors have strawberry plants, it will probably be sufficient to ascertain whether the variety grown is giving good satisfaction as to size, quantity and quality, and if so to give that a trial. Many varieties have imperfect flowers, hence do not fruit unless one having perfect flowers and blooming at the same time is planted among them. The most prolific sorts are found among the imperfect flowered, and the best of the imperfect flowered are better than the best of the perfect flowered in freedom from disease and in general reliability. Notwithstanding this, it will usually be better that the beginner try his prentice hand on the best of the perfect flowered sorts, those which have been thoroughly tried, found to possess vigorous constitutions, and to be able to adapt themselves to a great variety of soils and climates. Of these the *Lovett* is early, continues a long time in bearing, and is fairly prolific ; berries of medium size and quality.

Beder-Wood is the best very early, the plants are vigorous and yield good crops of medium sized berries, of good quality.

Wilson has long been the favorite berry with growers for market. It has proved to be able to adapt itself to a greater variety of soils and climates, and on the whole to give better satisfaction than any other one of those having perfect flowers. In the report of the American Pomological Society for 1891 it is double starred, which means very popular, in twenty-seven states and provinces and among these are the Provinces of

Ontario, New Brunswick and Nova Scotia. The varieties that come next in popularity are double starred in only eleven. These are the Charles Downing, Sharpless and Crescent.

Charles Downing has perfect flowers, berries of medium size and good quality ; the plants are hardy, but only moderately productive.

Sharpless is also perfect flowered, berries large, of good quality, plants very vigorous and hardy, but not very productive. It is more productive when grown in hills than in matted rows. Those who wish to try a variety having imperfect flowers will be most likely to succeed if they plant Beder Wood with the *Crescent*. They bloom at the same time. The Crescent is very hardy, and very productive ; the berries of medium size and fair quality, though in the writer's estimation not as good as the Wilson. We have a promising native Canadian strawberry raised by John Little, of Granton, Middlesex county, Ont., our Canadian strawberry king, called *Woolverton*. The flowers are perfect, plant reported to be moderately vigorous, very hardy, productive, fruit large and of good quality. It is placed third by Mr. W. W. Hilborn, Leamington, Ont., in his list of medium and late ripening sorts. See Bulletin No. 92, March 1894, Ont. Agl. College.

RASPBERRIES.

These delicious fruits begin to ripen with the last pickings of the strawberries, and can be as easily grown as a crop of potatoes. The plants may be set in rows six feet apart and two feet apart in the rows. This will give room for the needed tillage with horse and scuffler. Thorough drainage, pulverization and fertilizing of the soil will be followed by the same beneficial results as in the case of any farm crop.

PLANTING AND SUBSEQUENT CARE. If convenient to procure young plants in October there is usually an advantage in setting them at that time, for the reason that they then get an earlier start in the spring, and make stronger fruiting canes for the next season. The black-cap varieties are multiplied by the rooting of the tips of the canes, the others by suckers which come up during the summer. These last when received by the planter will have a cane a foot or more in length ; this he should cut off, leaving only a inch or two, just to shew the position of the plant after it is set out. If the cane is left it only serves, by putting forth leaves and possibly blossoms, to exhaust the power of the root to send up strong shoots which are to survive and produce fruit the next summer. If no sprout comes up from the root, the cane left on may put forth leaves, blossom and bear fruit, but in the autumn it will die and the whole plant will have perished.

During the first summer it is advisable to allow only two or three canes to grow, and in order to make them stocky, to pinch off the tips when at the height of about eighteen inches. In the second and subsequent summers more canes can be allowed to grow, and those that come up in the row to remain, so that in a year or two the plants in the row will form a raspberry hedge. Each summer when the fruit has been gathered, the canes that bore fruit had better be cut off at the ground, thus giving to the young canes a fuller exposure to light and air. If however farm work should be pressing, this *can* be left until any convenient time before the buds start in the spring.

It is advisable to plant the black cap family apart from the others, for the reason that the members of this family cannot be continued on the same ground as long. They will fail to produce satisfactorily much sooner, so that it will be necessary to set a new planting as soon as they show signs of failing. Good cultivation, keeping the ground clean and the surface loose and friable, and well fertilized with barnyard manure and unleached wood ashes alternately, will be well repaid in the size and abundance of the fruit. In those parts of the Province where the snow does not remain on the ground, it is very desirable to spread these as a top dressing in the fall or early winter ; but where a covering of snow can be relied upon to remain until spring, it is not so material when it is applied.

VARIETIES OF RASPBERRIES. The following are selected from among the many that have been or are cultivated, as the best for our climate that have been fully tested :

Cuthbert, a red berry, of large size, good color and good flavor. The canes are hardy if grown on well drained soil, but winter kill in low damp ground. It yields more quarts to the acre than any other known red raspberry.

Turner, is more hardy than Cuthbert, in fact the most hardy of any of the red raspberries, but not as productive. The fruit is of medium size, bright red, of very good quality. It is a valuable variety for home use, especially where the winters are very severe, and the snow cannot be relied upon to cover the canes. Though not equal as a cropper to the Cuthbert, it is by no means a poor yielder. It throws up numerous suckers, all of which, except those required for fruiting, should be treated as weeds.

Of the black-cap varieties the most popular is the *Ohio*, on account of its hardiness and productiveness. The berries are of medium size and of very good quality.

Hilborn, originated in Lambton Co., Ontario, is proving to be a very productive, vigorous variety. The berries are medium to large, very good, not so sweet as Ohio, and ripening later. Its ability to endure severe cold has not yet been thoroughly tested.

GOOSEBERRIES.

These can be grown in any good fertile soil, but prefer a strong clay loam, and should be frequently and liberally supplied with fertilizers, such as barn-yard manure and wood ashes alternately. Planted in rows four feet apart and three feet apart in the row, they can be easily cultivated by horse power. The plants will need some cutting out of weak and surplus shoots, and the removal of old wood that has borne three crops of fruit. The best variety for the farmers to grow is the *Downing*. It is not subject to mildew as are the English varieties, is the best of our American sorts, yields abundant crops of greenish white berries, which are of good size and of very good quality.

If you desire to make trial of some European gooseberry, the *Crown Bob* will probably give the best satisfaction. It is of large size, red color and first quality.

In order to prevent the mildew from destroying the crop it will be necessary to spray the plants with liver of sulphur (potassium sulphide) dissolved in water in the proportion of one ounce in three gallons. Commence to spray as soon as the buds begin to swell, and repeat the spraying every ten days until the fruit begins to ripen. The material is not poisonous, and does not discolor the fruit.

CURRANTS.

The same soil, fertilizing and pruning, that is recommended for gooseberries applies equally to the currant.

VARIETIES. The *Red Dutch* is the best of them all for home use. It is not so large as the cherry currant, neither is it as sour It is much more prolific, and much the better in flavor. When the plants are properly cared for the berries will very nearly equal even the cherry currant in size.

The White Grape is the best of the white sorts, of large size and excellent quality. The plants are vigorous and productive.

The *Black Naples* is the most desirable of the black currants, being equal to any of them in flavor, nearly in size, and yields the largest crops.

INSECTS.

The gooseberry and the red and white currants are liable to be seriously injured by the larvæ of a sawfly, now generally known by the term "currant worm." The flies resemble a small house fly; they come out of the ground about the time that the leaves appear on the plants, and deposit their eggs on the under side of the leaves that are nearest to the ground. As soon as the worms are hatched they begin to feed on the leaves, making little holes, so that the leaves look as if they had been pierced with very fine shot. By opening out the top these perforated leaves can be readily found, and if discovered should be sprinkled with something that will kill the worms. White hellebore has been recommended and used with good results, but frequently this has been kept too long and lost its efficacy, therefore to avoid disappointment it is safer to use Paris green. If this is promptly and thoroughly applied as soon as the tiny worms appear there will be no trouble in completely routing them. Half an ounce of Paris green in a pailful of water, kept well stirred so that it cannot settle to the bottom, sprinkled on the leaves so that all are thoroughly wetted, will be sure to kill them. If a piece of alum about the size of a hickorynut is dissolved in the water containing the Paris green, it will cause the poison to adhere to the leaves, and prevent it from being washed off so quickly by rains.

COST OF PLANTS.

Many have doubtless been deterred from planting these small fruits because of the prices charged by the seller. It is not to be expected that they can be bought through an agent at as low a price as when purchased direct from the grower. Any reputable nurseryman will furnish any of the strawberry plants named above, unless it be the Woolverton, at $1 per hundred. Any of the raspberry plants should be had at a dollar and a half a hundred. The currant bushes, nice two years old, can be bought for four dollars per hundred, and bushes only one year old for three dollars. First-class plants of the Downing gooseberry are sold at five dollars per hundred, and of the Crown Bob at twelve dollars per hundred.

CONCLUSION.

The varieties of the different fruits above recommended have been thoroughly tested in a great variety of soils, over large areas of country, and under varied climatic conditions, and have stood the test so well that we have no hesitation in commending them to the attention of our farmers as worthy of a trial in their fruit gardens. No doubt you will be urged to buy other sorts, wonderful sorts, newly discovered sorts, yielding fruits so much superior to the old, tested, reliable sorts, that you will be counted as way behind the times if you do not plant them. If you wish to be a member of the Experimental Union and give your countrymen the benefit of your experience in the growing of new fruits, by all means do so ; but if not, you had better wait and let them be tried at the Experimental Fruit Stations. If you are a member of the Fruit Growers' Association of Ontario you can read in the *Canadian Horticulturist* how they turn out at much less cost to yourself, and if they have proved to be worthy you can probably purchase them much cheaper than when they were first offered.

But none the less do you need a fruit garden. You need it for your own good and that of your families. An abundant supply of the appetizing, digestion-promoting, health-giving summer fruits is conducive in many ways to your comforts, and if you are near some prosperous town you may find, as not a few have found, that small fruits gradually spread over so much of the farm that they become the main source of income, and that a very satisfactory income.

MISCELLANEOUS.

PERMANENT FARM STRUCTURES.

BY ISAAC USHER, THOROLD.

This subject must be of interest to every farmer, for without good buildings he will not be able to obtain the best results from his outlay and work. Now that lumber is becoming more expensive, and is also of poorer quality, it is evident that other materials must be used for building. Without doubt the best, cheapest and most durable farm buildings are those built of cement concrete.

In France and Germany all kinds of railway structures, such as bridges, arches, abutments, are built entirely of concrete. It is also used largely throughout England and Scotland in the construction of docks, sea walls and other public works, and in the Manchester ship canal it was used almost exclusively.

All the large bridges on the American continent are on concrete foundations, so its use is not by any means new or theoretical.

HOW TO USE CONCRETE FOR BUILDINGS OF ALL KINDS.

There is no such thing as failure in this work if the concrete is properly mixed and used. Skilled mechanics are not required to do the work; any one who is careful to keep the walls straight and the corners plumb can put up a good building. Some of the best walls I have seen have been built by the farmers themselves. Among these, Mr. Beatty's, Derwent, Ont.; Mr. Andrew Dodds', Mr. Demeary's, Belmont, Ont.; Mr. Enoch Brown's, Brownsville; Mr. Corbett, County of Oxford; Mr. Clinton Van Patter and others, near Aylmer, are really better walls than many others built by men who follow the business. The best work is done by those who will follow the instructions of some experienced person and use common judgment and care. In making concrete it is very important that all sand, gravel and stone should be clean and free from loam or dirt, and all concrete must be well mixed in proper proportions. In order to do this well and thoroughly, build a large platform with boards or plank, without sides, and from twelve to eighteen feet square. Usually platforms are too small to do good and rapid work upon. Much depends upon the fineness of the sand and gravel used to determine the proper proportions of cement to use. If the gravel is coarse, with about enough sand in it to fill up the interstices, to six parts of gravel use one part cement. If the gravel is finer, use one part cement to four or five of gravel. If the gravel is like a coarse sand, then use one part cement to three of gravel. After mixing in the proportions determined, turn over the pile twice, so as to mix thoroughly the gravel and cement, before putting in any water. Pile the dry mixture in a cone shape and take the shovel and open from the centre to the sides. Leave the mixture about equal all round, having two or three inches over the bottom, then put in say two pailfuls of water. Turn the back of the shovel from you and push the dry mixture, a little at a time, in the water. Have shovels remove the mixture to the platform every time, so that it will all be wet. As the water is absorbed put more in the trench which will be formed by the shovels, and push the dry mixture in as before until all is moistened. Then pile up in a cone and turn over about twice quickly and put in the trenches of the wall and ram firmly. The quantity of concrete to be mixed at one time will depend on the number of men employed, as concrete should not be mixed too long before putting it in place, and in no case must any concrete be left during the noon hour or over night without being put in its place and thoroughly rammed.

Before the concrete is mixed, put up the scantling and plank to form the walls. Lay out the building the size required, dig the trenches for the foundations,—usually about twenty inches wide and deep enough so that frost will not get under the walls. Fill the foundations with stone, if stone is available, in this way: Spread concrete two or three inches thick over the bottom of foundation, not any faster than the stones can be laid; then put in stone of any size and hammer them down. Keep the stone a little way apart, so the interstices can be filled with concrete. Level up to the largest stone, then put on a good, swimming bed of concrete and more stone, and hammer the stone down firmly. Do not, on any account, put tile or any drain under the walls. Many foundations are ruined by having water standing in them. No drains are required where concrete walls and floors are used. If drains are needed for surface water, keep them outside and some distance from the walls.

FRAMES FOR BUILDING WALLS.

After the foundations are built up to the level of the ground, or a little above, put up the frame and build the concrete walls. This can be done in different ways, but the following I have found to be about the best: Bed plank, scantling, or any square timber that may be on hand, on each side of the foundation trenches. I have mentioned twenty inches as the width of foundations. Walls fourteen inches at the foundation line and twelve inches in thickness at the top or under the sill are heavy enough for any barn or house, or any other structure, except a very high silo. Having a twenty-inch base and a fourteen-inch wall above gives a three-inch offset on foundations at each side of the wall. Bed plank or scantling, as before mentioned, close up to the foundation line, then set up scantling, plank overlays or anything in the shape of timber that has one straight side for the two-inch plank on each side of the wall, then an inch wedge between the plank and scantling on each side of the wall forms the frame to build. Nail the bottom of the upright scantling firmly to the plank bedded on the ground. Keep the upright scantling about four feet apart and opposite each other on each side of the wall, nail on small strips near the top of the scantling all around the structure, then drive good stakes in the ground to spike braces to. If the concrete bed is in the inside of the structure, nail the braces to keep the studding in line on the outside. If the building material is outside of the structure, put the braces inside. Braces are required from one side only, as the outside and inside scantling are kept perpendicular and equidistant by nailing small strips across from the outside to the inside studding ; as the studding are opposite each other, this is easily done. When the strips are in the way of raising plank for wall, knock them off and nail on a little higher so as to admit the plank.

HOW TO PUT IN CONCRETE.

In putting in concrete, start at one corner and raise the walls ten or twelve inches at a time all around the building. Set the door frames and place the plank all around the building, inside and outside, wedged to proper line. Be sure to have wedges between plank and upright studding. If they are left out it will be found difficult to raise the plank after the concrete is rammed in between them. It is best not to mix too much concrete at one time, unless enough men are employed to put it in place very rapidly. Five men, after a few hours' practice, will build walls very quickly ; one man at the wall spreading and ramming concrete, one man carrying stone, if you have them, and placing and ramming them firmly in the concrete, one man wheeling and two men mixing. In placing stone in the wall, keep them at least two inches from the plank, so that no stone will show after the planks are raised. It is very important that the concrete should be well rammed between the stones and the planks on both sides of the wall, so that when planks are removed both faces will be firm and smooth. The planks should be twelve to fourteen inches wide, so that in raising them there will be about two inches of concrete above the lower edge of plank. Care must be taken not to have the concrete too soft ; when too much water is used it is impossible to incorporate cement evenly through the sand and gravel, and when very soft when rammed will not pack firmly ; when it is rammed down in one place it will rise in another. All stone should be firmly bedded in concrete ; this applies to concrete wherever used.

In putting walls under a barn or other structure that has been raised, raise the building to the height required, have it level, and set up studding to build the walls by. In finishing the walls under the sill, drive the concrete until it is well packed under them. It is almost impossible to lower a building on the walls without breaking the concrete. It is much better and cheaper to fill under the sills. This is easily done by keeping the inside plank three or four inches below the bottom of sills and driving in the concrete from the inside of the building. There should be no lugs on any door or window frames, as it is hard to fill in under them with concrete. Pieces of scantling should be nailed about the centre of the backs of the frames ; then the concrete will hold them in place without the lugs. The scantling spiked on the back also stiffens the frames and keeps them from springing.

BUILDING CONCRETE FLOORS FOR BARNS.

In laying barn floors of all kinds first grade properly. It is better to cover the grade with two inches or more, if convenient, of sand or gravel, well rammed, before putting down concrete. Floors four inches in thickness are strong enough for any kind of stock, for teaming over, or for any other usage they may be subjected to, if put down in the following manner: For the rough concrete, three inches in thickness, mix the concrete four, five or six parts of gravel to one of cement, according to the fineness of gravel used. Ram this down solid, and put on a finishing coat one inch in thickness, of two parts screened, clean, sharp sand, to one part cement, put on top of the coarse concrete and rammed firmly while the lower concrete is still soft. Ram so that the two are solidly incorporated.

The work can be best done by setting a two by four-inch scantling on edge, commencing at one end of the building, about three feet from the wall, or just what can be reached over easily. Ram the rough concrete approximately level within an inch of the top of the scantling, and bed on rough concrete next the wall strips of pine, dressed, one inch thick, two inches wide and about three feet long, horizontally along the wall to the length of the scantling mentioned, then spread on fine concrete level with the top of the pine strips and the two by four scantling on edge. Float the surface perfectly level, then finish smooth with plastering trowel. Take out the pine strip next the wall and fill in the hole the strip leaves with fine concrete and plaster smooth. Now move the two by four scantling three feet again, put in rough concrete and ram to one inch of top of scantling as before. Bed in next to finished floor the one-inch by two-inch pine strips, flush with the top of the first panel of finished floor, and level on the fine finish and float and trowel as before, and so on till the floor is finished. By following these directions the floor must have a perfectly level and true finish.

In cow stables the manure drops should be put in, and stalls for both cows and horses elevated according to the idea of the farmer having the work done, and the feed alleys elevated say twelve inches above all other floors, so the elevation of the feed alleys forms the back of the feed manger. This is very beneficial, especially where water flows in front of cattle, as hay, chaff, straw or any other feed is pushed under water-troughs and drops down in front of cattle without filling or interfering with water-troughs in any way. Everything can be swept in front of cattle and feed alley kept perfectly clean. If elevation of feed alley is determined on, set up plank on edge sixteen or eighteen inches wide, four inches apart. This can be done by taking plank eight or nine inches wide, or any two planks that will make the required height, and nailing them together by strips on back. Ram the four-inch space full of fine concrete, leave plank say for two days, then remove plank and grade alleys with earth, sand, gravel or any other material, within four inches of top of concrete curbing. Ram the earth firmly, then spread over one inch gravel or sand. The concrete in the alley should be three inches thick, two inches of rough and one of fine finish. Do the work as before explained. The curbing should be done first, as the longer time it has to harden the better. The next to be done is the bottom of the manure drops. Farmers' ideas vary on this subject very much; some want the drop from four to ten inches deep and from fourteen to eighteen inches wide. The large and deep drop has many advantages, and cattle soon learn to step over them. Excavations must be made for the drop to conform with the idea of the farmer building, and to a width not less than six inches wider than the drop when finished, so as to form a perfectly level foundation for the scantling set on edge. To form the finished drop take scantling three inches deep, set them required distance apart, and ram in two inches of rough concrete and one inch of finish, floated and trowelled smooth. Set all posts and upright timbers on bed of concrete before putting in concrete floors.

The gutters for horse stable floors are usually about twelve inches behind the tail post, and do not require to be over six or eight inches wide and two or three inches deep. Where sand and gravel are scarce and small field stone are plentiful, good and durable stalls may be made by paving in the following way: Take concrete mixed to about the consistency of plastering mortar, and spread on the stall a little at a time, two or three inches deep. Take paving stone and drive firmly in concrete while soft, thus pave the stalls, and fill with grout made of screened sand, two parts, and one part cement. Mix this in pails to about the consistency of thick cream, so that it will pour well, and pour over the pavement until all the crevices are well filled. This makes the stalls impervious to liquid manure, and they will last forever. This is just the system by which city pavements are made by concrete, underlying asphalt or vitrified brick.

If a new building is to be erected or an old one raised, put up scantling, as before described, and build concrete walls twelve inches thick, for sides and ends of building, to the required height. When roof is on put in floors, troughs and gutters for liquid manure as farmers' ideas suggest. Some farmers object to putting pigs on concrete floors, but my experience does not sustain that objection ; I know of concrete floors in use for years, and no bad effects have resulted. But should plank nest be required for pigs to sleep on, it can be arranged in many ways. A very neat way is to set two by six-inch plank on edge in one corner of each pen before putting in any concrete, then ram concrete within two inches of the top and cut two-inch plank proper length to fit. In cleaning out pens they are easily lifted and put back again. Pens without the plank nests are more readily cleaned, and when bedding is used pigs are all right. In examining such floors at the Agricultural College, Guelph, I found no planks and no complaints from the manager there.

My early life was spent in England and Scotland, and nothing else but stone floors and troughs were used there, and I never heard of any objection to them ; but where farmers so choose they can use plank on concrete in various ways. Hog pens built with concrete walls, floors and troughs are absolutely without the smell that is so objectionable about hog pens generally.

SILOS.

Silos built of concrete are no doubt good, durable and cheap. I built one last summer for T. D. Hodgens, of London, which is of the following dimensions: Inside measurement, sixteen feet wide, thirty feet long and twenty-six feet high, divided by a partition of concrete through the middle, making two silos fourteen feet six inches by sixteen feet inside. In each of the silos there is an opening from bottom to top, about two feet wide, opposite the feed room. These openings were made tight by putting matched pine boards across them, driven tight together and covered with tar paper inside, then another layer of boards. That made the openings practically air-tight. In feeding out the ensilage from the top, the boards are removed as required and laid away for future use. The silos just described are in a large barn. I also assisted Mr. Fred. Sharon, Frome, Elgin county, to build his silo. The dimensions are sixteen by forty-four feet, and 23 feet high. This silo has two partitions, making three compartments, twelve by sixteen feet. In addition to this silo, which is one end of his barn, his barn walls, forty-four by sixty feet, floors, and so forth, are all of concrete, making one of the most complete barns I have seen.

POULTRY HOUSES

built of concrete are warm and clean, and free from vermin, as the walls are smooth and can be easily white-washed. With good concrete floors and nests, they are a great improvement over the old, cold sheds ; and farmers who have such poultry houses tell me they are very profitable, on account of the large number of eggs obtained in the winter, when they bring a good price ; and poultry keep in good condition with less feed.

CISTERNS.

The very best and most durable cisterns are built of concrete, by using a frame to build them over. Two circles are made of two-inch plank the size required. The size usually built is about six feet across and eight feet deep. Dig the cistern about twelve inches larger than the circles, to allow two inches for two by four scantling to be set up all around, and four inches for concrete, which forms a wall around the circle. Place one circle say from two to four inches from the bottom of the excavation, the other circle about two and one-half or three feet below top of cistern. Place staves all around the circle. A few of the staves will have to be toe-nailed to the circle to hold it in place, driven so the nails can be pulled out with a claw-hammer when you wish to take out the frame. Put the concrete, made of not too coarse gravel, about a shovelful thick all around between wooden circle and earth. Take two by four scantling and ram solid. Then put on another layer all round and ram, until the wall is finished to the top of the staves. In about two days take out all the wood frame, and put in bottom of concrete, say four inches thick. Then take one of the wooden circles, which should be made in six segments, and spread a little at the joints to fit closely to the concrete all round the circle. Support this circle with six upright scantlings or any other timber, under each joint. There will be an opening on top of the circle. Cover this over by using one plank cut so as to reach across the opening, merely catching the edges of the outside of the plank of the circle. Then use short pieces of boards on top of plank just mentioned to the sides of the circle. Make the top as tight as possible. If there are any little holes, stop them with paper. On this foundation that has been prepared pile up sand in a cone shape to centre to form the temporary centre to support concrete arch. Put in through this sand the inlet or outlet pipe or tile. Place an old salt or cement barrel on the top of the cone of sand, or a light circular casting, that may be left in permanently, may be used. Now cover the sand with stiff paper, so as to make a division between the sand and the concrete. Put on concrete eight inches thick and ram firmly and carefully. In about a week take a trowel and take out the sand through the man-hole formed by the casting, or the barrel, which will have to be knocked to pieces to get out. Take out all the centring of wood, clean out bottom of cistern, and put on about one inch of fine concrete. Another plan is to have circles made in four segments. Nail one-inch matched boards firmly to these segments, and fasten together with dowels, except the last joint, which is held in position by a brace top and bottom across the cistern and a few little wedges in the vertical joint. For this pattern a separate circle must be made to support the sand forming the centre of arch. I find the most practical way is to educate one man in a locality to build cisterns by this method, who keeps on hand the circles and staves for different sizes of cisterns. Cisterns built in this way are nearly as cheap as wooden ones, and are practically indestructible, and the arch will carry any weight. Some very interesting work has been done during the past summer by Mr. S. H. Craig, of London, in his green-houses, such as floors, curbing for flower beds, and he informs me that during the winter he will make his tables and supports of all kinds for his green-houses of concrete. This is especially desirable, as the moisture and heat in green-houses rot out plank very quickly.

THIRTY YEARS' EXPERIENCE.

My experience has been gained largely during the past thirty years. I have built some of the largest bridges and tunnels on this continent. I have spent the past two years among the farmers of Ontario. In laying out the different kinds of work before mentioned, I have had very valuable information from the farmers in different parts of Ontario, particularly in arrangements for watering stock, ventilation, length of stalls, drops, etc. It may be easily arranged to have water constantly before the cattle where wind mills are used, or where the source of water supply is above the barn.

VENTILATION.

One thing I noticed in going through bank-barns last winter was a lack of proper ventilation, many barns being entirely too warm, especially in the morning. There are many ways of ventilating, but a very simple and inexpensive one is to put tile through near the top of concrete walls, about seven feet apart, or opposite each tail post. A wooden plug is suspended from the joist above each tile, to admit or exclude the air as required. A simple air shaft may be built through the mows above the stables by cutting a hole through the floor where required and putting up shaft made of inch boards ten or twelve inch wide nailed together and passing through the roof of the barn. There is no such thing as failure in concrete work of any kind, if the concrete is properly mixed and firmly rammed into the different kinds of work. Scientific tests of concrete show it to have nearly double the strength, both crushing and tensile, when well rammed.

OUR BOYS; HOW SHALL WE EDUCATE THEM AND INFLUENCE THEM SO AS TO KEEP THEM ON THE FARM?

By Mrs. Jas. Smith.

For some time I have been reasoning why the boys leave the farm. With so much to make life in the country pleasant, healthful and profitable, why is it that so many rush to the towns and cities to become, too often, failures as business or professional men? I have asked myself the question, how much has home life to do with this state of things? How much blame lies at our own door, and what can we do to prevent the frequent occurrence of the evil? What can we do as parents, and what can we do as sisters? I am well aware that many of the young men who go out from the farm into other walks of life are eminently successful. To-day farmers' sons are filling some of the best and most responsible positions in business and professional circles, and some of our most talented ministers, are those who took their first lessons in theology from nature's text-book, while they were faithfully performing their duties as farmers' sons. It seems to me that there is a tendency amongst farmers' boys to underestimate their position. There is a certain class of young men, who assume an air of superiority, and talk vaguely about the "poor farmer," till the farmers' boys begin to think that their position is an inferior one. Just what they mean by the expression, I am not quite prepared to say. If they mean financially low, prehaps quite a number of us, on account of the present depression, are included in that class, but then our brethren of the trades and professions are not exactly rolling in wealth, and poverty is no crime. On the contrary it has frequently been a blessing, while riches have been the ruin of many a man. The necessity to work, has been, so to speak, the salvation of many a man. It has called into action talents that otherwise would have lain dormant, and some of his best energies have thus been developed. Pythagoras says, that, "Ability and necessity lie very close together." We should endeavor from early childhood to inculcate into the minds of our boys, correct ideas of true respectability. While I would not have them think of themselves "more highly than they ought to think," I believe we ought to impress on them, more emphatically than is usually done, the fact, that our calling is a high and honorable calling; that we as a class are not people to be looked down upon and pitied and patronized, but intelligent men and women, able to take a place in and do honor to the community. Then we should educate the boy who is to stay on the farm with a view of fitting him for his work. Some say, that education spoils the boys and makes them dislike the farm. I confess that I cannot see the matter just in that light. I think, however, that there is a mistake made in giving the boys over entirely to the cramming process. During their early boyhood, and parallel with their scholastic training, they should be taught to do practical work on the farm. If such work has been done well, let us speak encouragingly and tell him so; we are not afraid to tell him if he fails. We do not usually scruple at pointing out his defects; let us be equally as prompt in meting out to him a few words of well merited praise. Never compare him with other boys in any such way as to make him suffer by the comparison. As he grows up we should do all we can within our means to gratify his tastes and inclinations in the working of the farm, and in improvements in buildings, etc., so far as those tastes and inclinations are compatible with a proper economy and good judgment. By these means an interest in the occupation he is to follow through life will be excited, which will increase as his strength increases and his mind develops. We should always remember, that our boy, though our own flesh and blood, has an individuality of his own. The influence we have exerted over him in his early childhood has no doubt moulded his character to a certain extent, has helped to form his likes and dislikes, and directed his thoughts into certain channels; yet, notwithstanding that fact, he is a separate personality with a will of his own, and thoughts and opinions of his own, which we should respect as much as those of a stranger. Then, I think, we should try to keep apace with the times, so that we can enter more fully into the thoughts and feelings of our children. As we grow older I fancy there is a tendency with most parents to live in the past, while our boys are living in the present. What was good enough for us twenty, thirty or forty years ago when we were young, is good enough for our boys, forgetting the changes which time has wrought and that our requirements were as fully met when we were young, as those of our children are now, or perhaps more so. What can we do as mothers and sisters to help to keep the boys at home? I wonder if any mother or sister, whose heart yearned for some absent loved one, has ever asked themselves the question, "Have I done everything I could, to keep my son or my brother on the farm? Have I exerted myself and endeavored in every possible way, to make home the dearest, pleasantest, cosiest spot on the face of the earth, the place above all places to be desired?" Such is just what home ought to be, whether its sheltering roof be that of a palace or a cottage, and with few exceptions, it is within the power of mothers and sisters to make it such. We know that sometimes the girls as well as the boys, are dissatisfied with country life. We are not going to discuss that side of the question just now, but presuppose that the girls are perfectly well satisfied with the little corner of this beautiful earth, where Providence has placed them. An eminent writer has said, "that not half the people know how to make a home." To learn this art is one of the greatest and most useful studies of a woman's life. We should make everything about our home as bright and attractive as possible. In order to do so, it is not necessary for us to have costly adornments. Velvet carpets, tapestry hangings and endless bric-a-brac are not essential to happiness and comfort. Expensive trappings, like luxurious viands, fall to the lot of the few, not the many of our land. However, we should study to make the most of our belongings and arrange our rooms in the most tasteful manner possible. Usually boys appreciate a neat, tidy room, and I believe their behavior is influenced by it. Although our means for adornment may be limited, yet, we should remember it is not always the most expensive articles which are the neatest and prettiest. I think the work of the ornamentation of our homes should extend beyond the four walls of our dwelling. It is not much trouble to raise a few hardy annuals or keep in order a small collection of geraniums; and a few well kept flower beds add greatly to the outside appearance of our homes. In whatever circumstances we are placed, we should endeavor to be contented and cheerful, always having a pleasant word for the boys. This is no doubt easier said than done, for the average boy is often a trying institution, still we ought to strive to attain to that state of perfection and never by word or look cause them to feel that they are in the way, but on the contrary impress on them the fact, that their presence in the house is necessary for our happiness. Help them in their games and innocent pastimes, making home pleasant for them. They will not seek entertainment elsewhere, if it is provided at home, and your society will exert over them a refining influence. Be quick to render little sisterly attentions, such as keeping their wardrobe in order, and not too quick to chide if occasionally a stray collar or tie is found out of place or the print of a soiled boot be left upon the scrupulously clean floor. There may come a time when you will long to see the footprints of your brother, but will look for them in vain. We should attend carefully to the physical wants of our sons and brothers. I think we ought to consult their likes and dislikes somewhat in culinary matters. No matter how plain the meal which is served, let it be well cooked and wholesome, and spread upon a table covered with an immaculate cloth in a neat and orderly manner and not in an "any way will do" fashion. No girl's education is complete until she can not only properly cook and serve a meal, but knows how to perform every other duty which falls to the lot of the housekeeper, which is necessary for the happiness and comfort of our loved ones. Such work is not drudgery, it is not degrading. Canon Farrar says, "that a life spent in brushing clothes and washing crockery, and sweeping floors may yet be a life so ennobled that, for the sake of it, a king might gladly yield his crown." The women of our rural districts, who, notwithstanding the multitudinous duties which fall to their lot, are by study and practice making their homes attractive to their sons and brothers, a place to be desired above every other place, are doing a noble work and exerting a moral influence which will be felt for years to come.

WHAT SHALL WE DO TO IMPROVE OUR ROADS?

By Jas. Sheppard, Queenston, Ont.

Leaving out the question whether the work is to be done by statute labor or by some other system, there are a few general principles which apply to the maintaining of our common roads, which it will be well for us to keep in view. I divide them as follows:

1st. *Good Draining.* It is impossible that any road improperly or inefficiently drained can be a good road. Let the side ditches be deep enough to properly drain the road-bed, and be particular that the outlets are open and of sufficient size to carry off the water. Where the flow is more rapid in some places than in others, see that the ditches are large in proportion, as it takes a much larger ditch to carry the same amount of water when the flow is, say two miles per hour, than when it is four miles per hour. In springy ground one or two tile drains under the road-bed will be a great improvement, but the main reliance must be in the side ditches. It is well to slope the edge toward the road, as it lessens the danger which attends deep, narrow ditches.

2nd. *Grading.* Let your grades be as low as possible. By continually cutting at the top and filling in at the bottom a great advantage can be gained in a few years. Remember the size of your load must be regulated by the weight your team can draw up the steepest hill on the road, and it will pay well in many cases to make an effort to lower the grade of steep hills and thus give increased hauling capacity, as well saving horse and vehicle.

3rd. *Crowning.* While it is necessary to crown a road, do not fall into the common practice of overdoing it. A rise of from six inches to a foot on a thirty foot road is all that is required if the drainage is good. A road too high in the centre is not a pleasant road to drive on, and the tendency of everyone to drive in the one track soon makes ruts which hold the water and lead to other evils.

4th. *Culverts.* Where vitrified tile pipe will answer they make a good and lasting culvert. Where a large capacity is required cement or stone arches will be found cheaper in the end. Do not make them too narrow, but remember that a few feet on the end of a culvert does not entail a very large increase on the original cost, and the lessening of the danger of accident and the increased efficiency of the road will more than repay the extra outlay.

5th. *Scraping and Planing.* This part of road maintenance is not appreciated in some localities. Where it is systematically carried out a decided improvement always follows. Planing a road has two advantages, either of which is worth more than the little extra time it takes to do the work. The first advantage is that it gives a smooth road to drive over, and this lessens the tendency of each driver to follow in the same track. The second is that it fills up all ruts and hoof-tracks, which hold the water that falls on the road. This water must either evaporate or sink into the road-bed, where it has a tendency to soften the bed, and thus aggravate the mischief. It will pay every road-master to scrape his beat at least three times in a season. The first time as soon as it is dry in the spring, the second when the spring rains are over, and again in the autumn, so that the road will be as smooth as possible when winter sets in.

Wherever they can be used to advantage the road machine is a great help in maintaining and improving roads. Besides the increased amount of work that can be done, the grading and levelling done by the machine is much better than the old system, and if followed by a heavy roller a decided improvement always results from their use. There are many other small things in connection with the work that can only be carried out by the intelligent road-maker as local circumstances may direct.

Where broad tires have been in general use a decided improvement has taken place in the character of the road, and it is to be hoped they will be more generally introduced in the near future.

We will not live to see all the roads in Ontario good roads, but we may live to see all the roads better than they are at present, and if each one will do something to bring about a better state of affairs, we will have the satisfaction of leaving the roads better than we found them.

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(10) A large and complete geological cabinet for the illustration of lectures on the origin, formation, and character of soils ;

(11) A good chemical laboratory, for instruction and practical work in chemistry ; and

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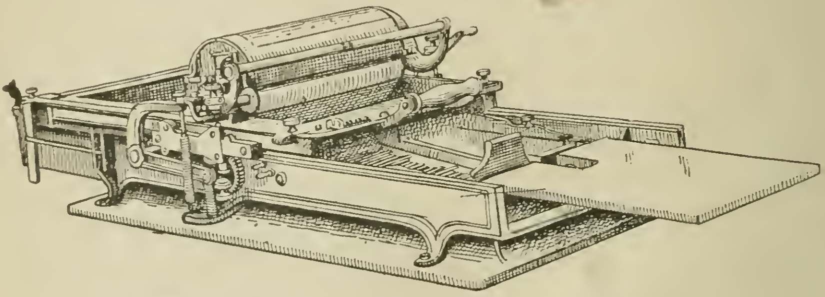

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